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THE A. I. ROOT COMPANY
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Our prices, as will be noticed by comparing prices on items listed below, are so reasonably low, that competitors claim superiority on the mere strength of their higher prices.

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On orders amounting to \$50.00 or over deduct 5 per cent.

Hives, Supers, etc., listed below are in the flat, and are complete with Hoffman frames, nails, metal rabbets, and all inside fixtures.

One-story Dovetailed Hive

Five 8-frame	\$16.00
Five 10-frame	16.90

Full-Depth Supers

Five 8-frame	\$8.00
Five 10-frame	9.00

Shallow Extracting Supers

Five 8-frame	\$6.00
Five 10-frame	6.50

No. 1 Style Comb Honey Supers

Five 8-frame	\$5.75
Five 10-frame	6.25

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100	\$8.50
500	40.00

Shallow Extracting Frames

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500	32.50

Our Incomparable Quality Foundation

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25 lbs.81c per lb.
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5 lbs.90c per lb.
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Especially prepared Beehive White paint, one-half gallon cans..\$2.10

Hoffman & Hauck, Inc.

Woodhaven, New York

HONEY MARKETS

U. S. Government Market Reports.

SHIPPING POINT INFORMATION, APRIL 15.

LOS ANGELES.—Supplies still generally heavy but old crop cleaning up in some sections. Poor wire inquiry, movement slow, market weak. Carloads f. o. b. usual terms, per lb., few sales, white orange blossom, 12½-13c, white sage 12-12½c, light amber alfalfa 6-6½c, light amber sage, 7½-8½, white alfalfa 7½-8c; Hawaiian white 7c, light amber 6c, honeydew honey 4½. Producers are reported as offering contracts for new crop white orange blossom 10c per lb., but buyers are holding off. Prospects for the honey crop are generally favorable thruout the State except in San Diego district and Salinas Valley where rainfall has been very light. Darker grades of honey are now on cheap price basis and competing with sugar for commercial use. The outlook is for a continued downward trend in prices for the darker-colored stock.

INTER-MOUNTAIN REGION (COLORADO AND IDAHO).—Shipments are lighter than for the preceding two weeks, the movement of comb honey being reported as especially light. What few sales are made are nearly all in less than carlots. White sweet clover and alfalfa mixed is being offered in carlots at 8c per lb.; but the lower prices at which stock can be purchased in California is proving too heavy a competition for most buyers, and they are accordingly holding off.

FLORIDA.—Due to favorable weather conditions, the nectar flow commenced unusually early, and considerable honey has already been produced. It is expected that the crop this year will be larger than that a year ago.

TELEGRAPHIC REPORTS FROM IMPORTANT MARKETS.

BOSTON.—No carlot arrivals since last report. Almost no demand or movement, dealers are holding at prices prevailing two weeks ago. Comb: Sales to retailers very few. New Yorks, 24-section cases white clover No. 1, heavy \$8.50-9.00, light \$7.00-7.50; Vermont, 20-section cases white clover No. 1, heavy \$8.00-8.50, light \$7.00-7.50. Extracted: Sales to confectioners and bottlers, Porto Ricans, few sales of amber 85c per gal. California, too few sales to establish market. Brokers' quotations delivered Boston follow: California, per lb., white sage 15-16c, light amber 10-14c, amber 7-9c. Beeswax, no sales reported.

CHICAGO.—No carlot arrivals but approximately 10,000 lbs. arrived from various States including Ohio, Colorado, California, Montana. Market very dull. Movement of extracted almost at standstill, attributable apparently largely to cheap sugar. Several dealers have from ½ to 1½ cars in warehouses; one large bottler is buying practically nothing. Extracted: Sales to bottlers and blenders, Colorado, Montana, and California, alfalfa and clover, white 12-12½c, light amber 9½-10c. Comb: Ohio, Minnesota, Illinois, 24-section cases alfalfa and clover No. 1, heavy \$6.50-7.00, light weight, discolored, \$5.00-5.50. Beeswax: Receipts and supplies moderate, market dull, movement slow and irregular. Still considerable foreign wax being offered, this depressing market somewhat. Sales to wholesale druggists, insulator manufacturers, harnessmakers, etc.: Texas, Oklahoma, and Missouri, light 30-33c, dark 26-29c; South American and African, unrefined 18-24c, mostly around 22c.

CINCINNATI.—Since last report, 1 car California, 1 car Wyoming arrived. On account of the refusal of the principal honey and beeswax receivers to furnish the information necessary to report market conditions and prices in Cincinnati accurately and completely, no report can be published for this important honey and beeswax center.

CLEVELAND.—No carlot arrivals since last report. Supplies are liberal but movement very draggy. Extracted: Dealers quote western, 60-lb. cans in 5-case lots or more; white sweet clover 16½-18c, amber alfalfa 16-16½c.

DENVER.—Market continues quiet, demand and movement very light. Sales to jobbers, extracted: Per lb., Colorado, white 13.13½c, light amber 12½-12¾c, amber 12c. Comb: Colorado, 24-section cases, No. 1, white \$6.08 per case, No.

2, \$5.63. Beeswax: Prices paid farmers average, yellow 20c per lb.

KANSAS CITY.—No carlot arrivals since last report. Supplies liberal, demand and movement slow on extracted, fair on comb. Sales to jobbers, extracted: Missouri, Kansas, and Nebraska, light amber various flavors 12-13c; California, Utah, and Oregon, extra light amber and white alfalfa, mostly 12c, Utah and Oregon, dark amber 10c. Comb: Colorado, 24-section cases No. 1, mostly \$6.00. Beeswax: Sales to jobbers, in small way, mostly 25c per lb.

NEW YORK.—Light l. c. l receipts from New York and California arrived, moderate receipts from South America and West Indies. Supplies liberal, practically no demand or movement, market weak, very few sales. Very few dealers doing any buying at all. Reduction in sugar prices has appreciably affected market for honey. Spot sales to jobbers, wholesalers, confectioners, bakers, and bottlers, extracted: Domestic, per lb., California, light amber and white alfalfa, mostly 7-8c, few 9c; white orange blossom and white sage, mostly 10-11c, few 12-13c. Imported, West Indian and South American, refined, mostly 5-5½c per lb.; 60-65c, few high as 70c per gal. Comb: No supplies, no sales. Beeswax: Domestic receipts light, foreign receipts moderate. Supplies liberal, demand and movement very slow, market weak. Few sales, only drug trade and few manufacturers of wax articles doing any buying. Spot sales to wholesalers, manufacturers, bleachers, and drug trade: South American and West Indian, light best 24-25c, few high as 28c, slightly darker low as 19c; African and West Indian, dark 15-16c, few 17c per lb.

PHILADELPHIA.—No carlot arrivals reported. Supplies light but more than sufficient to meet demand. Market steady. Few sales to bakers, extracted: Porto Rican, light amber 65-68c, amber 60-63c per gal. Comb: No sales. Beeswax: Supplies liberal, demand slow, market dull, manufacturers showing very little interest, dental manufacturers buying lightly. Sales to manufacturers per lb., imported, African, dark 15c; Chilean, light 30c; domestic, light 30-35c.

ST. LOUIS.—Comb, no receipts reported. Supplies moderate, market very dull, very few sales. Demand very limited and movement confined to small lots in sales direct to retailers. Colorado, 24-section cases, white clover and alfalfa, No. 1 heavy around \$8.00, light \$7.00. Extracted: Light receipts, supplies liberal, practically no demand and very little selling, market very weak. Sales to wholesalers, per lb., Missouri, Arkansas, and Mississippi, light amber various mixed flavors, mostly around 12c, dark amber low as 10c. Beeswax: Receipts light, supplies moderate, very light demand, manufacturers not buying, very light movement from hands of jobbers. Sales to jobbers, Missouri, Arkansas, and Mississippi, ungraded average country run 23-24c per lb.

GEORGE LIVINGSTON,

Chief of Bureau of Markets.

Special Foreign Quotations.

LIVERPOOL.—Since our last report no business has been done whatever, and values remain nominal, owing to there being no demand and heavy stocks. The value of extracted honey is about 11 cents per pound. The beeswax market is also quiet. The value per pound for Chilean at today's rate of exchange is 26-27c. Taylor & Co. Liverpool, England, April 5.

CUBA.—Honey is quoted at 40c a gallon; yellow wax, 20c a pound. A. Marzol.

Matanzas, Cuba, April 6.

Opinions of Producers.

Early in April we sent to actual honey producers, scattered over the country, the following questions:

1. What per cent of the 1920 honey crop is now in the hands of producers? Comb? Extracted?
2. What has been the total of winter and spring loss of colonies in your locality? Give answer in per cent.
3. What is the condition of the colonies at present compared with normal, considering strength, amount of brood, and amount of stores? Give answer in per cent.
4. What is the condition of the honey plants at this time compared with normal? Give answer in per cent.

For the southern States and California the following additional question was asked:

5. How does the early honey flow thus far compare with normal? Give answer in per cent.

State.	Reported by	Ex. on hand	Loss	Con. Con.	Plant Hon.	Flow
Ala.	J. M. Cutts....	75	2	135	125	100
Cal.	M. H. Mendleson	10	4	100	65	15
Cal.	L. L. Andrews...	1	10	75	60	30
Col.	A. Green....	30	15	70	100	
Fla.	Ward Lamkin....	10	0	100	100	50
Ill.	A. L. Kildow....	?	3	125	50	
Ind.	E. S. Miller....	30	5	100	100	
Iowa	Frank Coverdale.	5	2	120	70	
Kan.	J. A. Nininger....	0	7	80	75	
La.	E. C. Davis....	10	15	100	100	100
Md.	S. J. Crocker....	15	10	125	100	
Mass.	O. M. Smith....	10	1	100	100	
Mich.	B. F. Kindig....	7	2	125	100	
Miss.	R. B. Willson....	50	2	125	125	150
Mo.	J. W. Romberger.	0	7	95	100	
Neb.	F. J. Harris....	0	5	75	95	
N. J.	E. G. Carr....	5	5	75	80	
N. Y.	Geo. H. Rea....	5	5	100	100	
N. Y.	Adams & Myers...	25	0	95	98	
N. Y.	F. W. Lesser....	2	2	125	100	
Ohio	Fred Lininger....	0	0	100	100	
Okl.	Chas. F. Stiles...	5	0	90	60	
Ont.	F. Eric Millen...	5	1	110	75	
Pa.	Harry Beaver....	0	5	110	100	
Tex.	T. A. Bowden....	5	8	80	100	90
Tex.	J. N. Maves....	0	2	125	125	
Tex.	H. B. Parks....	5	3	100	100	88
Utah	M. A. Gill....	10	6	100	120	
Va.	J. H. Meek....	5	5	95	90	
Wash.	G. W. B. Saxton.	25	10	105	100	
Wis.	H. F. Wilson....	10	18	120	100	

The amount of comb honey on hand in Massachusetts and New York is 10 per cent; five per cent or less in California, Colorado, Indiana, Iowa, and New York; and none in the other States.

BOOKS AND BULLETINS

The League Bulletin, No. 1, Vol. 2, dated March, 1921, has just been issued by the American Honey Producers' League. This bulletin reviews the objects of the league, gives a list of its officers, its history, its constitution, a report of the meeting held at Indianapolis on Feb. 15-17, and the treasurer's report. H. B. Parks, P. O. box 838, San Antonio, Texas, is secretary.

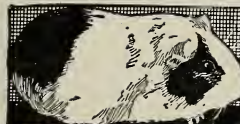
Bees and Beekeeping, by Frank R. Cheshire, F.L.S., F.R.M.S., in two volumes has been reprinted with an appendix, bringing the work up to date by J. B. Lamb.

ROOT'S BEE SUPPLIES.

I can make immediate shipment for early orders, and you can get the discount by ordering early.

A. M. MOORE, Zanesville, Ohio.

22½ South 3rd St.



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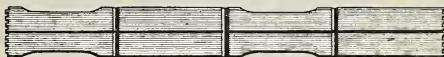
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The Root Grooved Section.

out or swinging over to one side. Combs are built more solidly to the wood all around and so ship safely. Helps prevent "pop holes," and insures a much larger percentage of fancy comb honey. Only 60c per thousand extra.

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Feeders	Smokers
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Gleanings in Bee Culture	Capping Melters
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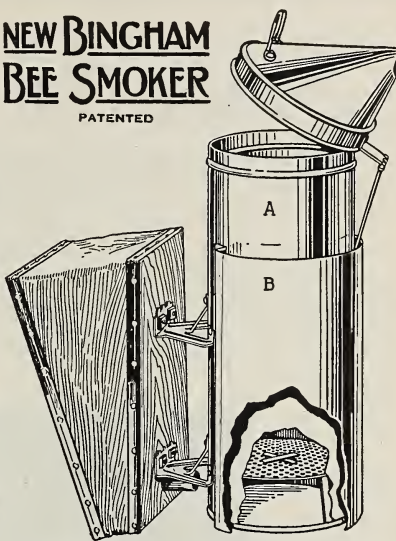
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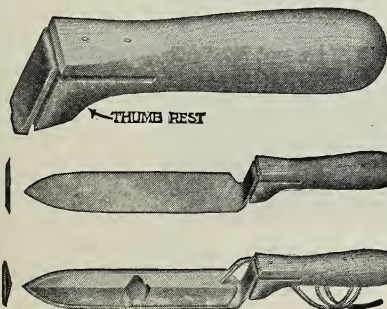
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Big Smoke, with shield.....	4 x10	3
Big Smoke, no shield.....	4 x10	3
Smoke Engine.....	4 x7	2 1/4
Doctor.....	3 1/2 x7	2
Conqueror.....	3 x7	1 3/4
Little Wonder.....	3 x5 1/2	1 1/2



Buy Bingham Honey Uncapping Knives

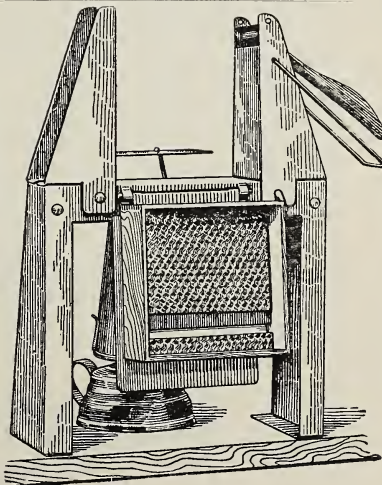
Made of the finest quality steel for the purpose that money can buy. These knives have given the best of satisfaction, as the old timers will testify. For over thirty years the men engaged in the manufacture of these knives have been at this work. The perfect grip cold handle is one of the improvements.

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SPECIAL SALE HONEY PACKAGES.

60-lb. cans, 2 in a case, per case in quantity lots, f. o. b. Chicago, at \$1.30; Detroit, at \$1.30; Baltimore, at \$1.25. Friction-top pails, f. o. b. Chicago, 5-lb. size, crates of 100 at \$7.75; crates of 203 at \$15.00; 10-lb. size, crates of 113 at \$12.50. F. o. b. Baltimore, 5-lb. size, crates of 100 at \$7.50; 10-lb. size, crates of 100, at \$11.00. Clear flint glass Mason jars with lacquered tin caps and wax liners, pints per gross at \$9.00, quarts per gross at \$10.00. Quotations on other packages made on request.



A. G. Woodman Co., Grand Rapids, Mich., U. S. A.

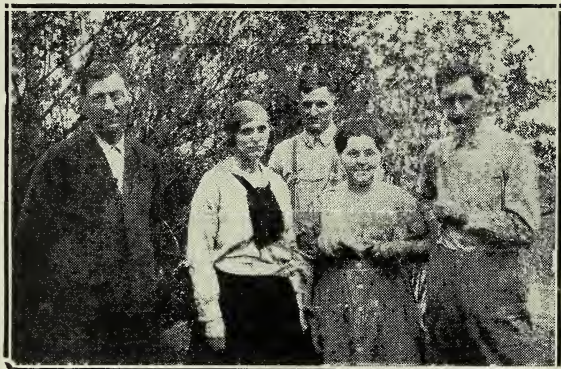
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¶ Men now spend their whole time on the manufacture of a single article—they often spend their whole lives. No wonder we have the enormous progress in modern industry.

¶ DADANT'S FOUNDATION is such a product manufactured under such conditions.

¶ A life specialty of specialists.



"Joe" Saugier, at the right, has been milling foundation now for forty years. Leon, his brother, at the left, for thirty-four years.

¶ Our employees as well as ourselves make a constant effort to increase the quality of DADANT'S FOUNDATION, thus assuring best returns to themselves, best service to us, and best quality to you.

¶ To the end that we may further improve, we invite honest criticism of DADANT'S FOUNDATION and comparison of DADANT'S FOUNDATION by your bees, with any you have ever received from us, or from anyone else.

DADANT'S FOUNDATION—Every inch, every pound, every ton equal to any sample we have ever sent out. Specify it to your dealer. If he hasn't it write us.

Dadant & Sons

Hamilton, Illinois

Catalog and Prices on Bee Supplies, Beeswax, Wax Working into Comb Foundation and Comb Rendering for the asking.

GLEANINGS IN BEE CULTURE

MAY, 1921

EDITORIAL

THE COLONIES are so strong and have so much more brood than usual for this time of year thru the north-eastern portion of the country that there is great danger of their running short of stores



Beware a Shortage of Stores.

before the beginning of the main honey flow. In the clover region the next few weeks is a critical time in this respect; and beekeepers should keep a close watch on the stores, for even a few days of bad weather may bring these big colonies to the verge of starvation and practically ruin them for the season.

On the other hand, these mammoth colonies are able to send such a large force of bees into the fields whenever the weather is favorable that they are often able to replenish their stores and actually gain in weight at this season while weaker colonies are starving.

No beekeeper can afford to take chances on meager stores at this time unless nectar is being gathered freely every day. Every colony should have 10 to 20 pounds of honey in advance of their needs to draw on during bad weather. No other one thing, in the care of the bees, is so important at this season as an abundance of stores.



AS WILL be seen by the Government market reports, the situation is improving.



The Honey Situation Improving.

Honey is starting to go to Europe in a limited way, and, what is of considerable significance, honey in bottles and tumblers is beginning to move. This is doubtless due to a slight improvement in the economic situation over the country generally. In the mean time the crop in southern California is not going to be as large as was first predicted. See report by L. L. Andrews in this issue, in the California department. The crop of Texas mesquite has been cut short by rains that came too soon.

The heavy freezes and blizzards, preceded by a prolonged spell of warm weather, have killed the early fruit bloom thruout a large area, and reports from all over the country indicate that this will be one of the shortest years for fruit that has been

known in years. The possible loss of bees by starvation thruout the United States on account of heavy breeding, the reduction in the California crop, and the failure of the fruit crop thruout a large portion of the country will have an influence in stimulating an upward trend in honey prices.



A REPORT of the investigations on the Isle of Wight disease by Dr. John Rennie and his associates, which led to the discovery of the cause of this baffling mal-



Isle of Wight Disease.

ady, has just been published in Transactions of the Royal Society of Edinburgh, Vol. LII, Part IV. (Issued separately as No. 29, March 25, 1921.)

This paper is in four parts: (1) The Etiology (cause) of the Disease, by John Rennie, D.Sc.; Philip Bruce White, B.Sc., and Elsie J. Harvey; (2) The Pathology of the Isle of Wight Disease in Hive Bees, by Philip Bruce White, B. Sc.; (3) Isle of Wight Disease in Hive Bees—Experiments on infection with *Tarsonemus Woodi*, by Elsie J. Harvey; (4) Isle of Wight Disease in Hive Bees—Acharine Disease: The organism associated with the disease—*Tarsonemus Woodi*, by John Rennie, D.Sc.

The authors give a brief review of the previous observations on this disease since it was first recognized in the island from which it derives its name in 1904, mentioning the work of Imms (1907), Malden (1909), Graham Smith, Fantham, and others (1912-1913), Anderson (1916), Anderson and Rennie (1916), and Rennie and Harvey (1919, two papers).

In 1912 and 1913 Graham Smith and others put forward *Nosema Apis* as the cause of the Isle of Wight disease, but in 1919 Anderson and Rennie, and Rennie and Harvey succeeded in establishing that *Nosema* infection is not found in Isle of Wight disease, but is the cause of a distinct malady. Similar conclusions had been drawn by Dr. White in this country in 1918.

The cause of Isle of Wight disease is now found to be a hitherto undescribed mite, identified by Dr. Rennie as belonging to the genus *Tarsonemus*, which it is proposed to name *Tarsonemus Woodi* in honor of A. H. E. Wood, who rendered financial aid in carrying on the investigations.

AN ITEM is going the rounds of the press to the effect that Dr. C. C. Miller, at the age of 85, after



He Made Millions —for Others.

having tried 14 different kinds of work, went into beekeeping; that his wife, in 1861, caught a swarm of bees and hived them in a sugar barrel. The story goes on to recite that he became so much interested that he made beekeeping his life work, and then adds, "Now he sells 20,000 pounds of section honey yearly, and is worth nearly two millions of dollars;" that "he has been stung 4,000 times; has become immune to stings, and has invented a successful treatment which brings him a considerable income."

Like many other newspaper stories this one is founded on a scintilla of truth. Dr. Miller did make a humble start, and did become interested in bees until he became one of the greatest authorities in the world. He did sell 20,000 sections of comb honey in one year when he was 85; but that was the only year when he produced so large an amount from so small a number of colonies. He did not "invent a successful treatment" for stings.

Dr. Miller, like most beekeepers, had his ups and downs. He made a comfortable living; he enjoyed the outdoors; but that he was worth "nearly two millions of dollars" is a joke. We wish it were so. His great asset in life was his ability to teach. While he did not make "millions" for himself, he enriched his fraternity by many millions. He showed how to keep bees better. His ideas were sound. His book, "Fifty Years Among the Bees," is as fascinating as a novel. His modest "Stray Straws," sparkled with gems. They were nuggets of gold. His constant look heavenward inspired thousands of lives, making better people as well as better beekeepers. He always said, when there chanced to be a poor honey year, "I have enough to eat. I am comfortable. I can get along if I do not get a drop of honey." This was because he was looking ahead.

Now, then, since he did not make millions for himself, but did make millions for his brother beekeepers all over the world (for his influence went beyond the United States), shall we not show our appreciation by contributing to the Dr. C. C. Miller Memorial Fund, mentioned on pages 8, 137, and 233, on his birthday, June 10 next? Amounts all the way from ten cents up will be received and credited to the fund. The good doctor, if he were alive, would appreciate more, we feel sure, a fund built on a large number of small gifts than a fund created by large ones. It has been suggested that each beekeeper on June 10 next be prepared to send in his contribution to the Dr. Miller Memorial Fund. If you are afraid you will forget it, send it now after reading this.

We are sure that there are thousands upon thousands of beekeepers who have

been helped by Dr. Miller. If he did not make millions for himself, yet he has helped to make millions for others, and those others will doubtless wish to have some part in his memorial.



IN THESE days of short cuts and wholesale methods in beekeeping, the labor of



To Take Away the Queen Without Having to Find Her.

finding the queens to make colonies queenless for swarm control

or in requeening the apiary is sometimes a burdensome task. On page 275 of this issue F. G. Rauchfuss tells the readers of Gleanings how to take away the queen from each colony in the apiary without the labor of finding them.

This important article should be carefully studied by every reader of this journal, for it not only outlines a system of swarm control for comb-honey production, which probably involves less labor than any other system ever devised for this purpose, but it is also full of suggestions which the ingenious beekeeper will find useful in many other ways.

By the method outlined by Mr. Rauchfuss, the queens are taken away from the colonies just previous to swarming time. This can be done without seeing a single one of the queens that are taken away, and the labor involved is largely in connection with the giving of the first comb-honey supers. The whole operation of removing the queens by this method is so simple that the queens of an entire apiary can be removed within a few hours. This method of dequeening and requeening with young queens for the control of swarming has been used for many years by Herman Rauchfuss and his son, F. G. Rauchfuss, and it has enabled them to operate a series of widely scattered apiaries near Denver, Colo., in the production of comb honey by the carload.

The plan fits in well with the present-day tendency in comb-honey production of building up the colonies to rousing strength in two-story hives, and then at the beginning of the honey flow reducing to a single story to induce the colonies to send a large force of their younger bees into the supers. Instead of bringing about a tendency to swarm when this is done the colony is put into a condition comparable to the parent colony in nature, except that its full working force is retained, and such colonies seldom attempt to swarm during the same season.

The simple method of inserting a queen-excluder between the two stories of brood in which the queen is working, in order to confine her to one of them, then later looking for young brood instead of looking for the queen, and taking away the chamber which contains the young brood, can be used to dequeen colonies for ordinary

requeneering as well as for dequeening in swarm control. This saves much time and annoyance in hunting for the queens. When this method of swarm control is used in localities which do not furnish a later honey flow, as in most of the clover region, if increase is not desired, the hive containing the old queen may be left standing by the side of the colony on the old stand for a week or ten days after the division was made, then these brood-chambers can be piled up as supers over weaker colonies, not being used to produce comb honey, paying no attention to the old queens. At the close of the season these brood-chambers, which should now be filled with honey, may be put back one on each hive after the comb-honey supers are removed. In this way the colonies are requeneered, swarming is prevented, and every colony put in a fine condition for winter by a few simple operations, without the necessity of finding a single queen, for the bees will take care of the job of disposing of the old queens.



WHEN ARTIFICIAL swarms are made to anticipate the issuing of natural swarms in



Swarm Control in Extracted Honey Production.

producing extracted honey, it is not necessary to set the parent hive at one side, as in comb-honey production; but the parent colony and the swarm may both be left in the same hive, the swarm being in the new brood-chamber at the bottom of the hive and the brood-chamber of parent hive (having all queen-cells destroyed) being placed above the supers. A queen-excluder used over the lower brood-chamber prevents the queen from going back to the combs of brood now above the supers. This plan is a variation of the Demaree plan in which the chamber containing the brood is placed directly above the queen-excluder, the supers being placed on top.

Placing the brood above the supers in this way separates the old brood-chamber from the new one more completely, which probably reduces the chances of a swarm issuing if a young queen should emerge in the old brood-chamber. In fact, some beekeepers who use this method do not find it necessary again to destroy the queen-cells that may be built in the old brood-chamber after it is put above the supers, provided there are at least two full-depth extracting supers between the new brood-chamber at the bottom of the hive and the old brood-chamber now at the top of the hive. In addition to this, placing the supers directly above the new brood-chamber usually results in the bees working in them better than when they are more remote.

When artificial swarms are made in this way the new brood-chamber may be filled either with empty combs or frames containing full sheets of foundation, together

with one empty comb. This plan for swarm control is used by many successful producers of extracted honey, being especially adapted to conditions usually prevalent in the clover region.

A condition similar to this can be brought about with but little labor in all colonies, whether they are preparing to swarm or not, by the following plan: If the bees are wintered in single stories, add a second story of empty combs, preferably dark combs in which brood has been reared previously, adding this second story early, before the colonies become crowded, permitting the queen to have a free range thru both stories. At the beginning of the honey flow add another extracting super as soon as needed. Under these conditions the queen usually abandons the lower brood-chamber, working chiefly in the second story.

About a week after the beginning of the honey flow or after the queen has abandoned the lower brood-chamber long enough so that the brood in this chamber has all been sealed, put the queen into the lower brood-chamber, confining her there by means of a queen-excluder; add another super of empty extracting combs, if needed; and, finally, put the brood-chamber, which was formerly the second story and which now contains most of the brood, on top of the supers.

The bees are now compelled to establish their brood-nest anew in the lower brood-chamber, which at this time usually contains some sealed brood and much pollen. They are usually rather slow in preparing cells for the queen, and the new brood-nest is not expanded rapidly.

While one might think at first that confining the queen to a single story after she has had a free range of the hive would increase the tendency to swarm, it will be seen that colonies treated in this way are in a condition similar to colonies that are hived on a set of empty or nearly empty combs. Apparently the re-establishment of the brood-nest in these combs, which have been abandoned for brood-rearing, is just as effective as tho these combs had been brought from the shop or honey-house instead of being a part of the hive at the time of the manipulation. If the honey flow is short, colonies treated in this way usually go thru the season without attempting to swarm, but they may do so if the honey flow is of long duration.

David Running, Filion, Mich., gives a second story early, then later puts the queen below an excluder, as outlined above. About ten days later he shakes the bees of the lower brood-chamber, together with the queen, into a new brood-chamber filled with frames of foundation and one empty comb or a full set of empty combs, and puts the brood from which the bees have just been shaken on top of the supers, thus combining the two methods given above, to insure that no swarms shall issue during a prolonged honey flow.

DURING my lifetime a revolution has taken place in beekeeping practice. I was taught to give bees the attention they called for from time

to time, watching for swarms in summer, for cellar temperatures in winter, and for robbing in spring. We enlarged and contracted entrances, hived swarms that came off, extracted a few combs at a time as they became ready, and were lackeys in constant waiting on the number of hives that one location could support. We could not start an out-apiary, because it took all our time to manage the one we had at home. The one yard yielded a fair profit, but there was no future except to be a pottering "bee-man" with a meager income. That was and is the kind of beekeeping which gives rise to the very prevalent idea that none but old people and incompetents should keep bees.

Right up to the turn of the century it was the all but universal custom to keep bees as indicated. The American bee journals were filled with methods of management. The bewildered reader was surfeited with instructions and advice. He was told how to prevent swarming **after the swarm had issued**, how to build up colonies—after poor wintering had weakened them, and so on. Something had to happen. The industry could not proceed, until someone untied the beekeeper from the thrall of waiting on his one yard of bees. The crying need was for a system by which he could give one yard forehanded management in one day sufficient to last it for a week or more while he attended to other yards in the same manner. Here and there advanced thinkers were working on the problem in the eighties. They were making real progress in the nineties, and during the present century the development has been rapid.

It began with the prevention of swarming and has branched out into all phases of beekeeping. I have cast about in my mind to find a suitable name for this new idea in beekeeping practice. Until someone suggests a better, I shall call it "forehanded beekeeping." Doubtless the distinction between it and the earlier methods is clear. It is to be the master of the situation, so far as the situation may be mastered. It is to prepare in advance for the more desirable conditions, so far as they may be controlled, leaving nothing to chance or what nature may provide. It is to foresee and forestall every avoidable loss. Forehanded beekeeping is founded on the best available knowledge of bee behavior and of every natural factor entering into the problem.

In what we have chosen to call "forehanded beekeeping," methods of wintering and of spring management have shown

FOREHANDED BEEKEEPING

A New Era in Beekeeping. Elimination of Fussy Spring Management. Forestalling Avoidable Loss

By Morley Pettit

chambers. We used to see how little we could feed in the fall and not starve the colony, weighing each hive and doling to each its pittance; now we feed practically all the colony will take and relieve ourselves of anxiety, knowing that "millions of stores at our house" will repay us in compound interest next spring. Above all we make sure of the quality of winter stores by feeding sugar syrup to every hive regardless of its weight.

Foundation for This Season's Crop Built Last Summer and Fall.

Just before the close of the honey flow we see that every colony has a good queen. When the light honey comes off about the first of August, each hive is left the equivalent of at least a half super of honey. This must be in a super, and not in the brood-chamber. The latter must be practically free of honey, and with no more pollen than the colony needs. Every brood-chamber is examined at that time to make sure it is in the favorable condition for brood-rearing just described. In our localities we are blessed with a superabundance of pollen and sometimes have to remove pollen-clogged combs. We recognize that each colony insists on having one pollen comb. We respect their wishes in this—we might as well—but we see that the other combs are fairly clear for brood.

Now with a brood-chamber clear for rearing the young bees which are to constitute the winter colony, and a queen able and willing to produce the eggs from which the young bees for the winter colony will grow, there must be a plentiful supply of food for these growing young bees in the supers, as previously stated. This point is so important that it will bear repetition. In fact, I can vouch for its importance because it has cost us more than the publisher would ever dream of paying me for this article to learn it. Besides providing for a dry fall, one must provide for a fall flow of honey by giving extra super space for storage. In other words, when hives are to be left to themselves while the apiarist is employed elsewhere, the necessary condition for success, which in this case is a full colony of young bees for winter, must be insured against all contingencies. It will be seen that we make no provision for the colony to supply itself with winter stores. On the contrary we do all we can to prevent it. We do not want the stuff they get in the fall, buckwheat honey included, in the brood-chambers for our winter of long confinement.

great progress. We used to reduce brood-chambers to protect small clusters; now we endeavor to provide large clusters to fill the brood-

Quality of Winter Stores.

Every colony receives its generous supply of good sugar syrup, regardless of how much natural stores it may have. Whether honey or syrup is better for brood-rearing is a question for the physiologist to determine. There can be no doubt which is better for winter in the north. One only needs to attend conventions in regions where bees are subject to winter confinement to collect evidence enough to convict and condemn the folly of dependence on natural stores. Of course, the matter must be approached cautiously, for the evidence is not forthcoming in a discussion on wintering as such. Just last December at a largely attended convention in Ontario, various sources of fall honey were being discussed. Some expressed grave concern as to how their bees would winter on certain varieties of honey they had gathered. Others related heavy losses they had endured every time their bees wintered on certain kinds of honey. These were prominent beekeepers depending largely on their bees for a living. Their bees represent capital investment and source of income. They were discussing in a commonplace sort of manner experiences and prospects of losing hundreds if not thousands of dollars worth of property, of capital investment and source of income, without considering that there might be any alternative but to take such losses as a part of the season's experiences to be related at the next annual convention. Upon the whole they had such a delightful talk-fest over the whole matter that those of us who knew a simple remedy could not find it in our hearts to interrupt. Anyway the discussion was on honey plants and not on wintering, so such an interruption would have been out of order.

Now do not let any more southern brethren smile in self-complacency over this little scene. Heavy winter losses attributed by the beekeepers themselves to faulty natural stores are often reported a long way south of the Canadian line in the United States of America. Do these unfortunate beekeepers learn their lesson? Not that I have noticed. "It is not their custom to feed sugar for winter." That is the only answer I have been able to get and once again, "It isn't done!" precludes all further discussion. It is some years now since I learned in that best of schools with the highest tuition fees that a good feed of sugar syrup after most of the brood has emerged, will prevent all such losses. It is a simple principle in "forehanded beekeeping," not at all original but often worth hundreds of dollars per annum.

Winter Packing Left on Late.

Our method of preparing colonies for winter was fully discussed in Gleanings last September. This method is calculated to carry them thru without any attention whatever until queen-clipping time in May. In brief, it consists in providing good queens

and good colonies of young bees, an abundance of stores of the best quality, ample protection, and room enough for the early brood-rearing. On the principle that "nothing succeeds like success," such colonies prepared this way have warmth and energy enough within themselves to move right along to the maximum strength which their queen is able to produce. The winter packing is left on till just before they require second supers, usually the latter part of May. First supers are given early in May within the boxes. The packing maintains a more uniform temperature by preventing rapid radiation of heat and actual escape of heated air when the outside temperature drops suddenly, as it frequently does during the northern spring. The heat produced by the large cluster of workers and by the developing brood raises the whole hive temperature, and the prolific queen spreads out great sheets of eggs which would simply perish on a cold night in an unpacked hive.

Early in May we find that the heat of brood and bees in most colonies is such that even on a day too cool for flying the workers are crowded to the outer corners of the hive, and even outside the entrance. As soon as this condition is found another story is added. If the brood-chamber is single, it is a second brood-chamber with dark number-one combs and no excluder. If a shallow "food-chamber" is present it may be an extra brood-chamber between the two or an extracting super with excluder on top, depending on the comb-space requirements of the queen. The extra space given so early serves a triple purpose, that of ample brooding space to rear harvesters, that of storage space for surplus honey, and that of clustering or resting space for the ever-increasing population desirous of escaping the brood-chamber heat. In all three it allows the colony to increase rapidly without becoming discontented and building cells for swarming. The vitally important job for the beekeeper now is to keep his growing families happy and contented each in its own home. As the supercedure of failing queens is one of the most fruitful causes of May swarms, we have with our young queens and roomy hives a combination which relieves us of practically all trouble in this line until clover opens in late June. This being a paper on spring and not summer management, we shall not pursue the swarm-control matter further now.

Clipping Queens.

We try to find and clip all queens on the first round in May. Clipping serves a double purpose, each of which is worth the trouble, and I can see no valid objections. Since "accidents will happen" it saves the loss of a whole colony of workers to have the queen clipped when a swarm occurs. With the queen clipped the swarm returns, barring the accident of a flying virgin, and we discover the condition on our next

round. The second advantage is the queen record, and it is quite as important as the other. With unclipped queens we have no means of recording for certain the age or ability of the individual. The most serious objection I have heard to clipping queens is the possible loss of a queen failing to find her way back to the hive with the returning swarm. If anything this is an advantage, for any queen so ungrateful as to lead out a swarm after I have done what I can to make her and her people comfortable need expect no quarter from me. "Off with her head!" She is too much like swarming stock; we do not allow her cells to remain to reproduce her kind either if we can help it. In any case, is it not better to lose the queen and save the swarm than have both fly to the woods?

There is no royal road to finding queens. As the search is included in a general survey of brood-chamber conditions, we generally start at one side and look over each comb in order until she is found. As in other manipulations experience is a great help, altho I have seen beginners who learned to find them quite rapidly in their first season. The main thing is good eyesight and a quiet confident manner in handling the smoker and the combs. My sister, who naturally does such particular work better than I do, finds and clips hundreds of queens in May without a veil and with scarcely any smoke. The entrance must on no account be smoked, and the hive should be opened without a jar. With the least possible smoke and disturbance, the first comb is removed and the others examined in order, always leaving a space for the next one to be lifted when the last one is returned. The queen is very easily frightened and set to hiding. She may travel away from you as you proceed thru the hive. A glance on the next comb as it hangs in the hive when you lift one out may reveal her, or she may be on what was the dark side of the one just lifted. The queen is most apt to be found on combs having eggs or brood, or perhaps on the sunny side of the hive; but there is no need to despair until the last comb has been examined. I seldom look over the combs a second time. It keeps the hive open too long and the chance of finding her is much less than the first time. Next week she may be found quite easily. Some queens are always hard to find. When these do not show up after a reasonable search the whole brood-chamber population has to be sifted thru a queen-excluder.

To clip a queen I lift her from the comb by a wing grasped between thumb and finger of the right hand, at the same time holding the comb in my left hand with one end resting on the hive. The right hand may be steadied by projecting the little finger against the comb while catching the queen. As soon as the queen is safely lifted from the comb the latter is set down quickly to free the left hand for holding the

queen for the clipping operation. Now press the tip of the index finger of the left hand gently against the under side of the queen's thorax, and she will grasp it with all six legs which have been sprawling in the air as she was held firmly by the wing. Close the thumb of the left hand on two of the longer legs, not too close to the body nor too tightly, and you now hold her by thumb and finger of the left hand with wings up ready to be clipped. I have a pair of short blunt pocket scissors, which are always in a convenient pocket winter and summer. They are useful for a great many purposes, including the clipping of queens. I take off two-thirds or more of both wings on one side, and try to leave the wings on the other side intact. This one-sided clipping cripples a queen for flying more than an even trim. As the wing is a dead membrane there is probably no pain caused by the amputation; but the man who recently advocated pulling a queen's wing out by the roots should be prosecuted by the humane society. I like this way of clipping because it is the way I was taught, and it comes easier to me than any other method. I could not bear the thought of mauling a queen's head and thorax between my clumsy thumb and finger, after viewing the beautiful and complex organs of sense with which they are covered. The nervous strain of trying with curved scissors to clip a queen, as she walks about the comb, "sends me clear up in the air."

The clipping record is very brief but sufficient. We never clip a queen until she has gone thru one winter, so the record of each queen we clip this spring will be the same: "C-21-1." When a queen is found to be already clipped we look for last year's record. If it is "C-20-1," the new record is "C-21-2." If for any reason last year's record is not available the record is "C-21-0." Unless the queen is something very special either 2 or 0 is a death sentence, "suspended," subject to good conduct, till near the end of the honey flow.

Inspecting for Disease.

This first time over the brood-chambers is an opportunity for a general review of conditions. A study of the brood reveals the ability of the queen to carry on, and, of course, we are alert for symptoms of disease. No European foul brood has reached us as yet, but occasional cases of American are found and have to be treated. When discovered early they are treated at once. When a few cells are detected in a good colony during the flow, the queen is removed and all cells destroyed a week later. As soon as the brood has emerged and when the flow is nearly over, the final treatment is applied. In all cases our treatment for American foul brood is the same. We call it the "gasoline cure." The idea is not original but is the most effectual cure for this persistent disease we have ever tried. The method is as follows: In

the evening when flying has almost ceased for the day, remove all supers, brushing and driving the bees down into the brood-chamber. Cover the hive and while scattered bees are getting in at the entrance take the supers inside the honey-house; or, if at an outyard, close them securely from robbers on the truck. When all are in, close the entrance tightly and raise the cover enough to pour a cupful of gasoline evenly all over the top-bars. Replace the cover as tightly as possible, listen for the roar of the bees to subside, and as soon as all is

quiet, carry the hive to where a grave has been previously prepared, brush the bees into it, and bury them deeply. Render all super combs as well as those from the brood-chamber into wax, taking all necessary precautions to prevent the spread of infection. I am glad I do not have to decide for the beekeeper who has a large percentage of infected colonies; but where we have so few cases and there is so much at stake we would not consider any less drastic treatment.

Georgetown, Ont.



WE have heard a good deal about beekeepers going from the North to the South for pastures new; but I am going to tell you about a beekeeper, who, altho his life has been spent in Texas, yet went north and made good. I refer to B. M. Caraway, formerly of Mathis, Texas, and now of Riverton, Wyoming.

It will be remembered that, while in the South, he was an extensive breeder of queens and bees. He also did a large business in shipping bees in package form to the northern States. He made a fine record, and one would think that he would stay where he was. But having a curiosity to know what the beekeepers of Wyoming were doing with so many bees they bought

WORTH A LOT TO KNOW IT

How to Ship Bees from South to North; Some Other Tricks Worth Knowing

By E. R. Root

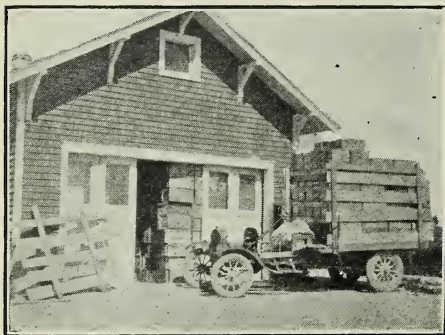
of him he made a trip there, and was so well pleased with the country that he bought out one of his customers and went into the business of honey production. But before doing so he began buying bees himself from the South in lots of 100 pounds to increase his holdings in bees. He has probably bought as many bees in packages as any single beekeeper in the northern States; and the very fact that he was formerly an extensive shipper of bees in that form himself will make his experience invaluable. As he has been on both sides of the deal he has learned some things that are worth giving to the public.

He, among other breeders in the South, discovered that he could send bees on sugar syrup made of one-half water and one-half



One shipment of bees made up into crates of six each, with one crate of two. Each cage has 3 pounds of bees, a can of syrup, half water and half sugar, and a queen caged among the bees. Experience shows this is better than to have her loose.

sugar without using candy. This is put into a tin can, self-sealing, with only a single hole in the bottom made with a small nail. The bees get this syrup thru this single opening as fast as they need it. The syrup has the advantage over candy because anybody can make it, and because it supplies both food and water. It is always uniform in that it does not become hard like candy so that the bees starve, nor does it become soft so that it runs and daubs the bees so much that they arrive at their destination a sticky mess. He finds that syrup solves the problem of a food for the transportation of bees in package form.



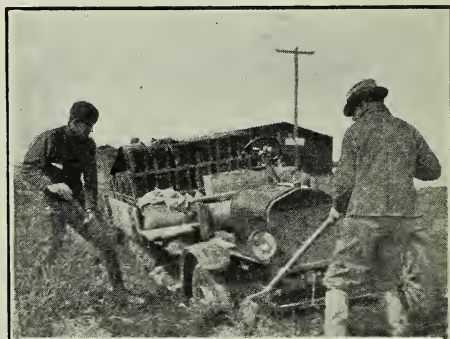
Caraway's truck and extracting-house at his home yard. It will be noticed that the weather is so warm that the hood of the engine is lifted off entirely. Think of its being *hot* in Wyoming where the winter record shows a temperature of 40 below zero!

While breeding and shipping bees Mr. Caraway learned also that the majority of honey producers in the northern States buy them in three-pound packages, with a queen caged among the bees—not released. This is the kind of package he had sent to him. The packages were shipped in lots of six to a crate. As will be seen by the illustrations, these containers were plain wire cages reinforced at the corners and tops, and braced at the sides. A single cage of bees will not travel as safely as a crate of six. Sometimes the crates are made large enough to hold as many as ten or a dozen three-pound cages.

So much for the "tricks of the trade" at the shipper's end of the journey. Let us now see what Mr. Caraway does at the other end of the route after the bees arrive, for we will not consider that he is a shipper but a receiver of combless bees. He explained that, after he went north, he lost a lot of bees even after they arrived in good order. He released several dozen three-pound packages of bees into hives outdoors, all at one time. The result was he would have a general mixup. The other bees of the yard would get in the game when there would be a general uproar. Mr. Caraway then struck upon this plan which I call

Caraway's thousand-dollar trick of the trade, or at least it will be worth a thousand dol-

lars the first or second season to a beekeeper receiving large consignments of combless bees. Mr. Caraway winters in cellars because of the very low temperature in Wyoming during the winter—the mercury sometimes going 40 degrees below zero, with very little snow. Along about the first of April the weather warms up, at which time he takes his bees out. When these are on their summer stands, and the cellar is empty, he makes up a set of hives ready to receive his packages of bees—as many hives as there are packages he expects to receive. He puts in each hive a frame or two of pollen, two combs containing a little honey, and one empty comb. This empty he puts in the center. If the other combs do not contain enough honey he pours syrup from a height into them. The hives thus prepared are all placed in the cellar; and when the shipment of bees arrives, if it is at night he puts them in the cellar. Next morning he lifts out his can of syrup from one of the cages, draws out the cage containing the queen, by means of a wire, from the bees and hangs this on the center comb that is empty. He then jars out of the cage perhaps 25 per cent of the bees so that they will surround the queen and keep her warm. He next lays the cage in the empty space in the side of hive not occupied by the combs; for by the plan outlined there will be only five combs for the three pounds of bees. In 24 to 36 hours the bees will have deserted the cage and gone to the queen. He now lifts out the cage, slides the frames over, and fills out the remaining space on each side with frames of foundation. In a like



Stuck in the mud; a sample of Mr. Caraway's Wyoming roads: good bee country, but travel very difficult, especially to an outyard location. Men are required to take shovels, picks, and general equipment to help them out of the mire if needed.

manner he releases the bees in all of the other hives, after which they are kept in the cellar in perfect darkness for four or five days. This is important, and is the secret of the trick. In the mean time the bees get started in real earnest without molestation, start breeding, and begin to draw out the foundation—in short, settle down to regular housekeeping. At the end of the

period these newly formed colonies are set outdoors the night before, when they will be ready to defend their entrances and maintain their identity. In this way he saves all the bees that arrive in good order. He avoids the uproar of robbing and saves the queen.

There! do you get that thousand-dollar trick? And don't you see it will not take many shipments like this to save the thousand dollars?

Doubtless there are receivers of bees in package form who do not winter in cellars. I believe it would pay such to use the house cellar after making it dark, and carry out Mr. Caraway's plan, for it will work as well on one package as on a hundred.

Mr. Caraway says that his experience has shown repeatedly that a package of three pounds of bees and a queen, if it arrives in good order, is in every respect equal to an average colony wintered in the cellar. In some cases the package bees are cheaper, if cost of stores, care of moving into and out of the cellar, etc., are taken into consideration.

It is not always "smooth sailing" in Wyoming, as will be seen by the class of roads that are encountered. (Excuse the mixup in the figure of speech.) The machines get mired in the soil, for there are no roads there. He and his men have had numerous occasions to dig their machine out of the mud, as one of the illustrations will testify.

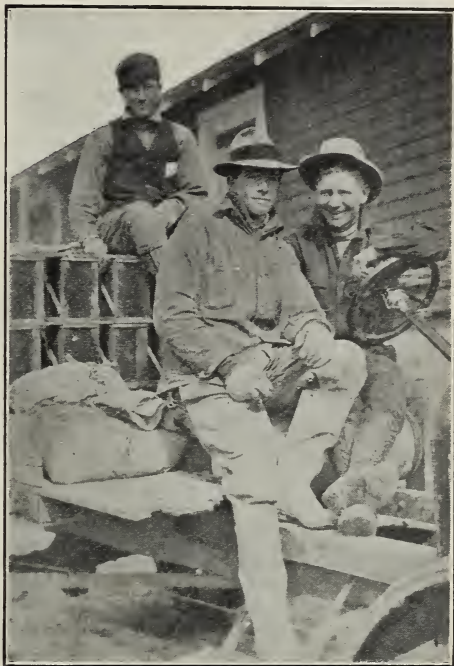
Another difficulty is the extreme cold, the mercury at times going down to 40 degrees below zero; and, strangely enough, it is excessively hot there during the summer.

In regard to cellars Mr. Caraway believes, with the writer, that they should be relatively long in proportion to their width in order to get a large amount of exposure to Mother Earth. His cellars are 8 feet wide by 50 feet long, well under ground, clear below any possible freezing. He finds the temperature of 45 degrees is correct.

He likewise prefers colonies in Jumbo hives, as he says it is clear that they swarm less, and come out in the spring much better

than those in the standard Langstroth hives.

Probably, if the truth were told, Mr. Caraway went north because he could get some good hunting by so doing. He has some wonderful trophies that he secured after



B. M. Caraway and his helpers and truck with a load of bees ready to start for an outyard—Mr. Caraway at the wheel.

the bee work was over. It is hard to understand how a good beekeeper could leave the balmy Southland for the cold, cold North, where the temperature goes 40 below zero in winter and then turns to boiling hot in the summer.

WHY honey in filled sections will granulate more quickly, if the sections contain comb drawn out the previous year, than if the combs are drawn from foundation the current season, is a question that seems somewhat difficult to explain, yet the subject is one of considerable importance to producers of comb honey.

By the 15th of June clover is usually coming into bloom, everything looks promising, and hundreds of supers go on to our

GRANULATION IN COMB HONEY

The Probable Cause of It and a Suggestion as to How This Granulation Can be Avoided

By J. E. Crane

hives. Then, perhaps, hot dry weather sets in, and by the time the supers are half full the flow of honey fails, and, instead of some thousands of salable sections, we have thousands of sections from one-fourth to three-fourths full, with only a small number fit for the market. Or it may be that the close of a fairly successful season catches us with a large number of unfinished sections. A part of these may be used profitably as bait sections; but,

if entire supers of these are used, the resultant honey must be sold as an inferior grade, owing to its greater liability to granulation.

In order to produce honey in the half-filled sections that will not granulate the following season, must we extract the honey, break or cut out the combs, and melt up for wax and refill with fresh foundation? If we only knew the reason why honey in sections of comb drawn the previous season is more inclined to granulate than in combs recently drawn out from foundation, we might in some way avoid the difficulty and so use our last year's half-filled sections very much to our advantage. Bees will occupy and fill these a great deal quicker than they will supers filled with foundation.

My Experience With Granulation.

During the season of 1915 we had a fair crop of honey; but the quality was not so good as in previous years; and, what was worse, it began to granulate early, and there seemed to be no end to this trouble. We had used some sections with drawn combs, but the tendency of the honey to granulate did not seem to be confined to such sections. I noticed also that combs most inclined to granulate seemed to contain more or less light-amber honey, evidently something besides clover. Moreover, I found some combs were free from granulation, except perhaps an inch or so at the bottom of the section where it was solid; while others might be granulated at the top, but not at the bottom. Another thing I noticed was that those combs that contained pure clover honey did not granulate.

A Possible Explanation.

These observations led me to conclude that the tendency of honey to granulate does not depend nearly so much on the age of the comb as on the kind of honey with which it was filled. I remembered that, during the spring of 1915, there had been an unusual flow of honey from dandelion bloom. Indeed, most of the hives were packed with dandelion honey. Few hives had enough room for brood. As clover bloom opened, the hives were given supers; but the yield of clover honey was light, and a large amount of dandelion honey was carried up into the sections to make room in the brood-chamber for the queen. This accounted for the large number of sections containing honey of a light-amber color, it being a mixture of clover and dandelion. The fact that dandelion honey granulates quickly after being gathered accounts in part, at least, for the unusual amount of granulation in this locality during 1915.

My Guess Corroborated.

At the close of the season of 1915 we had a good many unfinished sections. The honey was extracted from these, and the combs of the poorest were cut out and melted up for wax, while the whitest were saved to be used again next year. These were not used as bait combs; but, after marking with a

pencil every section containing drawn combs, the supers were filled with them and they were used on the hives the same as sections of foundation.

The season of 1916 in this vicinity proved very good for clover. There was a fair yield of dandelion honey that was quite largely used for the production of brood. Surplus from clover was not stored until after June 25, with the result that not much dandelion honey was carried up into the supers; yet a few colonies stored some. It was late in August when one of our men cleaning sections exclaimed, "What is the matter with this section?" "Why, that has begun to granulate," I said, and I took the section and looked it over to see why it should granulate so quickly. Was it a section containing a last year's comb? Not at all. It was a comb built new this year. What kind of honey? It was amber, the same, apparently, that made us so much trouble last year.

We have found some combs since where early granulation had set in, but apparently without the slightest regard to the age of the comb; but in every instance in sections or combs with light-amber colored honey, which, without doubt, was largely dandelion. So I am more than ever convinced that my theory concerning the cause of granulation is not far from right.

The reason the same kind of honey granulates more freely some years than others may be because a small quantity of another kind is mixed with it—enough to work mischief, but not easily detected either by color or flavor. Some one will ask, "Why is it that bait sections are more liable to granulate than others?" I answer, because the foundation, being already drawn out, bees are more liable to store early-gathered honey in these than in those that must first be drawn from foundation.

Best Sections from Bait Combs.

But why are these bait combs so much darker than those drawn from foundation? Combs, as we all know, will darken with age; and, if kept over, and filled and sealed, without the addition of new wax, will appear very much darker than new combs. In some way bees seemed to have learned the scriptural injunction about putting new cloth into old garments. At any rate, they seem to hesitate about adding much new wax to last year's comb. To overcome this difficulty I have been in the habit of cutting down old combs so they will not be more than three-fourths of one inch thick. This literally compels them to add new wax to lengthen out the cells and then cap with new wax, giving them a nice appearance. I have had such combs the past season that went in with my best grade of honey. Such combs should be used preferably only when the best grade of honey is coming in, so as to be out of danger of getting mixed with dandelion or other honey that granulates soon after being gathered.

Middlebury, Vt.

SWARM CONTROL

Removing the Queens Without Finding Them. A Simple and Practical Way of Checking Swarming in Comb-Honey Production

By F. G. Rauchfuss

IN order to follow out the plan described below it is quite necessary to begin operations the latter part of the honey flow, so as to have the colonies of sufficient strength the next spring. In most cases this can be accomplished by wintering in double-story hives, making sure that the colony has plenty of honey and bees. One very essential point is to have a good strain of bees—bees that will winter well and raise an abundance of brood, so that a double-story hive will be none too large for them. If colonies are strong in the latter part of the honey flow, instead of putting on the last comb-honey super and running chances of not getting the sections finished and in many cases getting them stained more or less, a set of combs may be put under the brood-chamber, which at the end of the honey flow should be quite well filled with honey and brood. If colonies are not strong enough for two stories at the close of the honey flow, it is advisable to double them up. If colonies have been handled properly in this manner, in all probability they will come thru the winter quite strong, thereby giving them a good opportunity of gathering the early pollen and nectar which are of great benefit to them in building up.

Now assuming that the bees had been prepared in this manner and are in two-story hives in the spring, leave them this way until they have both chambers well filled with brood and the upper chamber quite well filled with honey, except the space occupied by the brood. Some colonies in this condition will have queen-cells started; if queen-cells are to be grafted, this is the time to do it.

Assuming a colony in this condition with no cells started, remove the upper story; then on the lower chamber place a super, or two supers if the honey flow is heavy enough to warrant it; then place a bee-escape board on top of the super or supers; put a piece of queen-excluding zinc over the hole in the bee-escape board; and finally put the upper chamber on top of the bee-escape board. If the upper chamber has enough bees to work in a super, place one on top, being sure to provide a flight-hole in the upper chamber.

If a colony has cells started, cut out all queen-cells from the lower chamber, and place a super on this chamber or two supers should the honey flow justify it. Next, place a bee-escape board on the super or supers; put a piece of queen-excluding zinc over the hole in bee-escape board; then set the other chamber on top of the bee-escape board as before. If queen-cells are not to be grafted cut out only the sealed queen-

cells in this chamber, and place the queen in the lower chamber. If the queen in this colony is not good enough to rear queens from, cut out all queen-cells,

and in this case it is immaterial whether the queen is above or below. If the colony is very strong put another super on top of the upper chamber, put on the cover, and provide a flight-hole in this upper chamber.

Eight days later when the next visit is made, first treat the colonies in which unsealed cells were left in order to secure select queen-cells. Now remove the upper chamber and super or supers under this chamber and take away the lower chamber which has the queen, moving it to a new location. Next, the chamber that was on top is placed on a bottom-board on the old stand and all queen-cells but one are cut out, using precaution in doing so, as these are mostly ripe cells from select stock and they will be needed in the other hives that had no queen-cells on the former visit. Next place the supers on this chamber, being sure to provide plenty of super room.

By removing the hive containing the queen to a new location most of the field bees will go back to the old stand; and in most cases it is not necessary to cut out the queen-cells in this hive, as the bees will generally eat them out. This colony, by losing the field bees, has a splendid opportunity to rear brood, as they will gather very little honey for some time. The queen will now have a chance to keep the hive filled with brood and this colony should be in fine shape for a later honey flow. The young queen from the cell in the hive left on the old stand should begin laying within about 12 days, and there should be very little trouble with swarming from either one of these hives.

With the colonies that had no queen-cells on the former visit, the first thing is to find out which chamber the queen is in. This can be easily determined by examining the brood in the upper chamber; if there is no young brood, she is below. Then proceed as with the other colony, with the exception that when treating the chamber left on the old stand, all queen-cells should be cut out and one of the ripe queen-cells saved from the other colony should be given. If cells have been grafted from select stock, use one of these or a virgin queen. Should the queen happen to be in the upper chamber when the examination is made, move that portion to a new location, the essential thing being the removal of the brood-chamber containing the queen.

Englewood, Colo.

IN most localities suitable for comb-honey production on a commercial scale, swarming is one of the most difficult problems with which the

comb-honey producer has to deal. The intensity of the swarming tendency varies greatly in different localities, during different seasons in the same locality, and in different colonies in the same apiary during the same season. It is apparently greatest when colonies build up most rapidly to great strength in the spring, as is usually the case in the far North, especially if a moderate honey flow comes on at the time the colonies have the greatest amount of brood. It is usually less troublesome when colonies build up more slowly, especially if the weather conditions permit the bees to work freely in the fields every day. Under such conditions as in the tropics, the swarming season may be long drawn out, sometimes lasting several months; while in the far North it is, usually well defined, most of the swarming often occurring within three or four weeks.

These differences in the intensity of the swarming tendency have led to much disagreement among beekeepers as to the best methods for swarm control; but, as the reasons for the differences become known, they throw considerable light upon the conditions under which bees may be induced to apply themselves to energetic work instead of swarming.

Preventive Measures.

Much time and energy have been spent in the attempt to breed out swarming by selecting breeding queens from colonies less inclined to swarm, with the hope of finally developing a non-swarming strain. While after years of selection swarming has been reduced, these carefully bred strains continue to swarm when conditions are favorable, swarming or a lack of swarming apparently being brought about more often by conditions in the environment than through heredity.

Many attempts have also been made to construct a non-swarming hive, but at present there is little if any ground for hoping that swarming can ever be controlled completely by means of the hive alone in the practical production of comb honey. From all the experimenting along these two lines much has been learned, enabling beekeepers to reduce swarming by better bees, better hives, and better combs.

Influence of the Hive and Combs.

Previous to the honey flow, swarming can usually be prevented by supplying ample space for brood-rearing, using two stories when necessary. The better the combs, of course, the more room there is in the

COMB HONEY PRODUCTION

Swarming Greatly Reduced by Better Bees, Better Hives, Better Combs, and Better Management

By Geo. S. Demuth

brood-rearing are more inclined to swarm than colonies having more. Colonies which have barriers of imperfect comb between the areas of good comb are more inclined to swarm than colonies having perfect brood comb thruout the brood-chamber, permitting the free expansion of the brood-nest without interruption.

Colonies in hives which afford less comfort for the bees are more inclined to swarm than colonies in hives which afford them greater comfort. For this reason ventilation, shade, and even the color of the paint on the hives influence the tendency to swarm. Thus while in practice swarming can not be prevented entirely by means of the hive and combs alone when producing comb honey, the amount of swarming can be considerably reduced by providing ample space for brood-rearing, good combs, and comfortable hives. Even the location of the apiary has its influence upon swarming. Colonies located in a hot nook where the breeze is almost entirely shut off are more inclined to swarm than those located in more comfortable quarters.

Distribution of Bees Thruout the Hive.

Apparently anything which causes too many bees to crowd within the brood-nest, tends strongly to bring on swarming regardless of the total number of bees in the hive. Therefore any condition which affects the distribution of the bees within the hive, has its effect upon the tendency to swarm. Colonies which have a large proportion of emerging bees and bees too young to go into the supers or into the fields, are more inclined to swarm than colonies which are able to send most of their workers into the fields and the supers during the heat of the day, leaving only enough bees in the brood-nest to do the necessary work there. Colonies of medium strength which confine their work largely to the brood-chamber at the beginning of the honey flow are more inclined to swarm than stronger colonies. Colonies in which the super workers are crowded back into the brood-chamber as the combs in the sections become fully drawn out before an additional super is given, are more inclined to swarm than colonies which are furnished additional room before any of the super workers are crowded down. Colonies in which the super workers are forced to go back into the brood-chamber because the supers become too hot, are more inclined to swarm than colonies having the supers protected by shade-boards or covers painted white, which

brood-chamber for brood-rearing and the greater freedom in expanding the brood area. Colonies which have less than 60,000 cells available for

begin super work with a rush. Colonies which at the beginning of the honey flow have a rim of sealed honey between the brood and the supers, are more inclined to swarm than colonies which have brood practically to the top-bars of the brood frames.

Influence of Idle Field Bees.

Apparently any interference with the work within the hive, such as discomfort from heat, lack of ventilation, lack of room for incoming nectar or congestion of the brood-nest by young bees which should be in the supers, is immediately reflected in a slowing down of the work of the field bees, causing them to stay at home in greater and greater numbers, thus increasing the congestion and discomfort and usually resulting in preparations for swarming. In this way a small beginning in temporary discomfort, lack of room in the supers, or conditions which do not attract the idle younger bees into the supers, may quickly develop into a sluggishness of the work of the entire colony and bring on swarming. After this condition has once started it is difficult to break it up, even though the cause is entirely removed. This is where "an ounce of prevention may be worth several pounds of cure." Colonies in which the field workers are compelled to stay in the hive during the heat of the day on account of showers or erratic yielding of nectar, are more inclined to swarm than when the field workers can work in the fields thruout the day. A few days of rain in the midst of the early part of the honey flow is often followed by intense swarming, especially if the temperature continues high while the field bees are forced to stay at home.

The tendency to swarm is least in those colonies in which the younger bees are attracted into the supers to the greatest possible extent and the greatest possible number of field bees are at work in the fields, leaving during the warmest part of the day only enough bees within the brood-chamber to take care of the work to be done there. Apparently the greater the activity within the hive among the hive workers, the greater the number of bees sent to the fields, and the only way to prevent loafing among the field bees during the honey flow is to prevent idleness of any of the hive workers. In the production of extracted honey this is not difficult to accomplish by providing supers of empty extracting combs a little before the bees need more room thruout the season, but it is more difficult to accomplish when producing comb honey.

Much can be done, however, to prevent the beginning of the train of events which lead up to the issuing of a swarm, and the comb-honey producer can not afford to neglect any of the important preventive measures suggested above, for by careful management the percentage of colonies that prepare to swarm can be greatly reduced even when producing comb honey. Usually the greater the percentage of colonies which can

be induced to work vigorously thru the season without swarming, the greater the crop of honey at the close of the season.

No Swarming Previous to the Honey Flow.

Previous to the honey flow, swarming can usually be prevented by giving each colony plenty of empty combs. An extra story of combs partly filled with honey usually furnishes an excellent safety valve to hold down early swarming, as well as acting as an automatic feeder. If the colonies were wintered in single stories, the second story is usually more effective in preventing swarming when placed above than when placed below, and dark combs which have been used previously for brood-rearing are better for this purpose than new combs. The greatest objection to the use of two stories at this time for comb-honey production is the necessity of shaking the bees from the extra set of combs to reduce the hives to a single story at the time the first comb-honey supers are given, but the stronger colonies now obtained by up-to-date beekeepers can not well be managed as to early swarming without the use of a second story, or at least a shallow extracting super during the spring.

Critical Period When First Supers Are Given.

When the two-story hives are reduced to a single story at the beginning of the honey flow, and most of the brood is put into this one story filling it almost completely with brood, the colonies are usually forced to enter the supers at once: but, unless they enter the supers and draw out the foundation immediately, the crowding of a two-story colony into a single story may result in the starting of queen-cells preparatory to swarming. A few bait combs in the first supers may be necessary to prevent this, but having the colonies strong and using full sheets of fresh foundation are important factors in a prompt beginning of work in the supers. It is sometimes best to give two comb-honey supers at once to colonies which have been reduced from two stories to a single story. After work has once been started in the supers it is not difficult to induce the bees to expand their work into additional supers, as more room is needed if each additional super is given in time.

Remedial Measures.

The beekeeper who is operating a single apiary and can just as well spend the swarming season among his bees, should secure excellent results by discouraging swarming as much as possible, then permitting those colonies which insist on swarming to swarm naturally, living the swarm on the old stand, transferring the supers to the swarm, moving the parent hive to one side and a week later moving it away while the bees are well at work in the fields to deplete it of its working force, thus preventing after-swarming and at the same time adding these extra bees to

the swarm where super work is in progress.

The beekeeper who is operating out-apiaries, or the beekeeper who is away a part of the time during the swarming season, can not well permit his bees to swarm naturally. In this case each apiary must be visited and the colonies examined for queen-cells about once each week during the swarming season; or all colonies must be treated for swarming before swarms begin to issue, regardless of whether queen-cells are present or not.

If the weekly-visit plan is used when queen-cells are found which contain only eggs or very small larvae, these cells may be destroyed and the colony left another week. Sometimes they will give up swarming when this is done, but often they build more queen-cells immediately and will be ready for treatment at the time of the next visit a week later. When destroying queen-cells in this way it is necessary to shake most of the bees from the combs to be sure that none of the cells are overlooked, for if one is left a swarm may issue before the next visit.

If well-developed queen-cells are found, destroying them will probably do no good, and the colony must now be treated. Just what remedy is best depends so much upon the character and advancement of the season, as well as upon the condition of the colony, that no set rule should be followed blindly. In some cases taking away the

brood, leaving most of the bees, the queen and the supers together in the hive on the old stand as in hiving a natural swarm, gives best results. When this is done the removed brood, together with enough bees to take care of it, is placed in an empty hive; and this hive is now treated as the parent colony in natural swarming, care being taken to see that it is supplied with a good queen-cell, one that has not been injured by shaking the comb.

In other cases the queen should be removed or killed, all queen-cells destroyed, and the colony left until the tenth day when all queen-cells should again be destroyed and a young laying queen introduced.

Colonies treated in this way are comparable to the parent colony after all swarming is over and the young queen has mated and begun to lay, except that its full working force is retained. Thus by creating conditions, either comparable to the swarm or comparable to the parent colony, swarming can be controlled in out-apiaries when producing comb honey. Many variations have been worked out for each of these plans, but the basic principle remains the same thruout the various methods. The removal of the brood usually gives better results during a short rapid honey flow, as frequently occurs in the clover regions; while the removal of the queen usually gives better results during a prolonged honey flow, as in the alfalfa region of the West.



HANDS up, all you who have never lost honey by having too few supers, or by other lack of preparation for exceptional flows. Not many hands go up.

The writer has tried to avoid such losses, or reduce them to a minimum, and in spite of occasional criticism by others because of the magnitude of such preparations, yet losses have occurred at times.

This past season we put up over 700 new dovetailed hive-bodies with frames, besides one or two hundred new hive-bodies not used the previous year; then there were about 300 hive-bodies filled with old frames, and nearly all, old and new, were put in use, to handle the heavy honey flow.

The cut shows most of the new hive-bodies piled up and being painted. Note the ventilator hole in the end of each hive-body, and the cleats, $\frac{1}{2}$ by 2 by 16 inches, across the top of each, reinforcing the weak strip left by the cutting of the rabbet in which the frames hang. No hive is complete without these reinforcing cleats. They

PREPARING for the HONEY FLOW

Importance of Having Enough Supers to Take Care of Exceptional Yields

By E. F. Atwater

extend down 1/32 of an inch below the upper edge of the hand-hole, thus giving a far better grip or handle, than the hand-hole alone.

Nor do these cleats interfere with piling or loading, as they extend clear across, and merely require a little more room, as each body is one inch longer than when cleats are not used. After years of use of thousands of hive-bodies with such cleats, I cannot urge too strongly their value and importance, for hive-bodies so reinforced and strengthened are far less easily damaged.

We were a little late in getting our little home extracting-plant ready for use, but for some weeks we ran two eight-frame extractors, from the single two-horsepower electric motor, and we finished the season with the largest crop and the largest per-colony average that we have ever taken, together with about 300 colonies of increase, leaving nearly every colony with four or five full combs of honey, in addition to the amount stored in the brood-nest.

This leaving a heavy supply of honey is

one of the most important steps in the preparation for a big crop the following season, and is our invariable practice. It pays well, as the bees breed more freely when spring comes, the beekeeper does not need to worry about any lack of stores, and spring care is reduced to a minimum. As soon after our last honey flow as possible, we reverse the position of the two stories in which the bees are wintered, so the bees and brood-nest are at the top. The bees then carry up honey all thru the fall, from the combs below, and store it in the brood-nest. In spring, when one story is fairly well filled with brood, the super is put above, but should not be put above too early where nights are cool.

If we were again producing comb honey by the earload, we would try to devise a plain, simple super which could be cleaned

ments of 20 years ago. Better apply a little preparedness to the production of comb honey, by devising simpler and better apparatus and machinery to speed up the work of producing, and preparing the crop of comb honey for market.

The producer of extracted honey who is not located near a can factory had best have tanks to hold a large part of his crop, and, if a uniform product is desired, large tanks are best. Our largest holds about 12,000 pounds, and we like it; but, for a smaller business, tanks holding about two tons are very convenient, and be sure that they have large honey-gates.

Unless you have far more hives than you need for full colonies, you had better prepare a lot of five-frame standard nuclei: then by establishing nuclei, you are always ready to save any first-class queen-cells



Painting supers. E. F. Atwater, Meridian, Idaho, preparing for a big honey crop.

by passing it thru boiling lye water. The lye, however, is fatal to paint; but would not the lye act as a preservative of the wood, even if the supers were not painted? I know how weeks are sometimes spent in cleaning comb-honey supers ready for refilling; while, if they can be boiled, this time could be very greatly reduced. I tried boiling the ordinary section-holders, but they are easily loosened up, so they need re-nailing. There have been marked improvements in methods and apparatus utilized in the production of extracted honey, but the comb-honey producer has nothing of importance better than the plans and imple-

ments which you may find. If you do not at once need the queens so mated, their colonies can be allowed to build up fairly strong. If no increase is desired, a frame of emerging brood can be drawn from each, and added to the producing colonies occasionally, as long as the bees so added will be producers; or, the older queens may be killed and the entire nucleus colony set down in the middle of the colony where you have just killed the queen, and the young queen, being at first among her own bees, will usually be accepted if this is done in a fairly good honey flow.

Meridian, Idaho.

E. F. Atwater.



VALUE OF GOOD QUEENS

Why Beekeepers Should Rear Their Own Queens

From the days of Langstroth and Quinby down to the present time the masters of beekeeping have pointed out the importance of the queen in relation to successful honey production. It is a well-established fact that a good queen is necessary if a honey crop is to be secured. Yet it is doubtful if many beekeepers fully realize the importance of having a good, young, vigorous Italian queen at the head of every colony at the proper time, so that the colonies will be strong and the hives filled with brood and fairly boiling over with bees just as the honey flow opens. When this condition prevails, a large yield is assured, provided there is anything like a good honey flow. In any apiary of any considerable number of colonies will be found colonies that produce those phenomenal honey crops, double or quadruple the average of the apiary. Many other colonies will be found that produce little and some that give no surplus whatever. My personal opinion on this matter is that too many of us are prone to believe these yields, both large and small, are due to some peculiar honey-getting qualities of the bees, or the lack of such qualities. In most cases, if a careful examination were made of these exceptional colonies, it would be found to be the condition of the colonies rather than any inherent quality of the bees. And further, it would be found that the age and the quality of the queen are responsible for the condition of the colonies. By the quality of the queen, I mean that she was properly reared, which is usually the case where she was reared under the swarming impulse or during supersedure. To be sure, there is a difference in honey-getting qualities of bees, but the age of the queen has most to do with it.

To realize the importance of having young, vigorous queens in all colonies, the beekeeper may make the following test. At the close of an ordinary season, figure up how much honey you got per colony. Then figure up how much more you would have gotten, if every colony had done as well as the best one. Many would find that their income would have been doubled, as the expense and the work connected with a poor colony are about the same as with the best one. Now if you had as good queens in all colonies as the one in the best, your yield per colony would have equaled the best. But some will ask, "Is it possible or practical to have all queens equally good?" What is there to hinder? It is no uncommon occurrence for beekeepers to report that the

average per colony was above what their best produced several years before under similar conditions. They had become better beekeepers and had all colonies in better condition, altho they had not bred a better strain of bees than the ones they previously had. How then are you to proceed? There is only one way, and that is to **rear your own queens**. It would be impossible to buy enough queens to requeen as often as necessary, even if it were advisable. I believe the time will come when most honey producers will consider as a regular and necessary part of the work of the apiary, that of rearing queens. The era of better beekeeping is coming, and we can hasten it in no way more than by rearing our own queens if we know how, and if we do not, we should learn.

It is gratifying to see the number of agricultural colleges that now teach apiculture. They cannot do a better service than to give an extensive course in queen-rearing. Graduates would be in demand, for in many cases the beekeeper could afford to hire a graduate to rear his queens and requeen his entire yard, if he were not in position to do it himself.

Jay Smith.

COLOR OF DRONES

American-Bred Italians More Uniform than Imported Stock

Regarding the article of E. P. Stiles in March Gleanings, page 150, on the color of drones from imported queens being more uniform than from American-bred queens, I will say, after over 30 years of study and comparison of drones from imported Italian queens and from what other close observers have told me, that our American-bred queens throw more uniform drones than do the imported stock.

I have never yet seen an Italian queen of known purity throw drones that were uniform in color. If they are yellow, there is always a variation in the shade of yellow. This leads me to believe that the Italian bee is not a pure strain or race of bees. Like the Plymouth Rock poultry, it is necessary to breed for color all the time. The variation in color is not only in the drones but in the queens as well.

It is surely a fact that the pure Italian stock which we imported years ago reverted back to dark or black bees very quickly if they were left alone and no pains were taken as to color. This is a fact up in this northern section anyway, so we still select for color. I think Mr. Stiles means dark-brown, and not black drones.

Sacket Harbor, N. Y. Geo. B. Howe.

FROM THE FIELD OF EXPERIENCE

NATURAL SWARMING

Some Advantages in Permitting Bees to Swarm When Producing Comb Honey

In our good seasons where colonies breed up early, some are apt to swarm before the clover flow. Even in 10-frame hives they may swarm by the middle of May, whereby the working strength of these, our best colonies, is nearly all lost. When producing comb honey it was a common practice to take out a frame or two of brood from such colonies and fill in with empty combs, giving the removed brood to a weaker colony. This is a mean trick. Why not conserve the strength of these colonies by giving more room for the queen, by adding a shallow chamber of good brood combs, and have these colonies growing stronger for the honey flow, the same as if running for extracted honey? By so doing we ought to get big returns from these colonies, and have something to brag about the rest of the year.

I don't think it pays to bolster up weak colonies. In early spring I double up all weak colonies. After that I preserve the individuality of each colony, and see to it that no colony has acquired the swarming fever by the time the clover flow opens. Putting on section cases early will not help. They must have a place to put brood, or honey that may be moved to give more room for the queen.

Colonies that have not acquired the swarming fever before the honey flow may not start queen-cells for some time; and, when they do, ordinarily the swarm will issue about eight days afterward, or when the cells are capped over. This gives time for some good work in the sections.

But in the meantime about 60 or 70 per cent of the colonies in the yard are getting ready to swarm, and I am not going to hinder them. Why? For a number of reasons. First, we expect a good fall flow. I want two colonies instead of one for that, and there is plenty of time between flows for building up to gather it. After I put on the section supers, I will not hinder in any way the "will to work," which I may have created, or the effort to carry out nature's law of increase, because they are doing their best, both in brood-rearing and honey-gathering. Do the wrong thing at this time and see how the bees will sulk. I will not take any brood from a colony before it swarms, as it needs it all. I will not overhaul a colony and pick off queen-cells to keep it from swarming, for to do so does not prevent swarming; besides, overhauling the whole yard every few days is too much labor.

All young bees from eggs laid after June 10-15 will not gather any white clover honey, and most of them will have died

before the fall flow opens. These bees are boarders. After swarming the queen will occupy only the minimum space, not more than two-thirds of that needed before swarming; hence, less brood to care for and more honey in the sections. Again, for several days previous to swarming, the queen slackens egg-laying and will not lay any to speak of until the third day after swarming; but honey is being stored rapidly, and should go into the sections, not the brood-chamber. Hence, I hive the young swarm in a rather small brood-chamber, less than 7-*Langstroth* frame capacity, just enough for the queen. I want the white honey in the sections at this time.

Over the brood-chamber I place a queen-excluder, then one or two section cases, and the unfinished work from the old hive is placed over all. The old hive is moved to one side and the swarm is placed on the old stand. Now I have the added impulse to work to build the new home, and no brood to feed for six or seven days.

Earlier writers treated a colony after swarming as two colonies, and tried to make each store comb honey. Yet the honey flow is over before any young bees can emerge from eggs of the young queen. We have only a divided colony, and I am going to handle it as such. I want the old hive weakened so that it can build up only for the fall flow. This does away with after-swarms.

I never read of a good plan to utilize "boarders," the surplus bees at the end of the honey flow. But 40 years ago Rev. O. Clute of Iowa City, Ia., said to me: "I divide the brood and make two colonies and let them build up for winter." I know he did that, for that spring he had sold \$1,400 worth of increase. Roland Sherburne.

Lone Tree, Iowa.



HOSPITAL YARDS

Precautions and Suggestions on the Treatment for American Foul Brood

A big step toward the eradication of American foul brood could be made if every beekeeper would absolutely avoid the shaking treatment of diseased colonies in an apiary of mostly healthy stock. In large yards, this very procedure disseminates the disease just about as much as tho one were to open a diseased hive and allow a dozen other healthy ones to help themselves. According to my theory, when the shaking treatment is applied, the colony so treated is thoroly demoralized by smoke and manipulation, causing many bees to take wing; and in their frenzy they drift into other hives and present to the household their contaminated honey. Of course, the treatment of one or two colonies at the proper



FROM THE FIELD OF EXPERIENCE



time may not necessarily cause this condition, but when it comes to half a dozen or more, the manipulation becomes far-reaching.

Every beekeeper that discovers disease in his yard should immediately hunt out a location some three miles or more from all other bees, and designate it as a hospital yard. He should then carefully inspect every colony for disease and mark those that have any cells showing American foul brood. That same evening, after all the flying bees are in for the night, the entrances of all the diseased stock should be screened and every hive hauled to the hospital apiary. About a week later another thoro inspection should be made of the entire apiary or apiaries, and all stands showing any infection should be treated in a like manner. If there is a honey flow on, it is then the appropriate time to go to the hospital yard and apply the shaking treatment to every colony within the yard. In about 10 days these colonies can be taken back to their respective locations, assuming that they have been cured. The big idea is always to get the infected colonies into the hospital yard immediately upon discovery of their diseased condition. Bees drift more or less at all times during the flying season in large yards with hives of similar appearance and surroundings, and it is this drifting that eventually spreads the disease to a certain degree.

It would be a great thing in localities where there are many beekeepers, if they would all co-operate along this line. Hospital yards could be designated in locations easily accessible to the majority of the producers. All diseased stock could be placed in the community hospital, and a certain day named for all the owners to assemble and apply the treatment to their respective colonies.

Every bee inspector should endeavor to bring about these conditions within the territory directly under his jurisdiction, as it would undoubtedly prove to be a real factor in the curtailment of American foul brood.

T. V. Damon.

Yerington, Nev.

[In the eastern States it would be difficult, if not impossible in many cases, to find a location for a hospital yard that is three miles or more from all other bees. In some parts of the West this should not be so difficult; but, in finding a location where there are no other bees, there is danger of selecting one in which there is no honey flow, thus increasing the difficulties in treatment. A more serious objection to hospital yards, so common in some parts of the West, is that the beekeeper does not feel the necessity for extreme care in handling disease as he would if the colonies are left in the main apiary, and, in the rush of

other work, too often the colonies in the hospital yard are left untreated thruout the busy season. In some parts of the West the remnant of hospital yards have been apparently abandoned completely by beekeepers who were too busy or too careless to treat the diseased colonies, the owner probably thinking that they are so far away from other bees and so well hidden from the bee inspector that there is no reason for haste in treatment. A sort of community hospital yard, carefully located as Mr. Damon suggests, could, no doubt, be made to work out well in the western States where locations can easily be found in the desert far away from all other bees.—Editor.]



RETAILING HONEY

Folly of Selling Retail at Wholesale Prices

There have been three or more trips made down thru here by parties from Weld, Larimer, or Boulder counties, selling honey as low as \$8.00 for a 60-pound can. These parties make a run of 100 miles or more out across the country along the principal auto road. The people for 20 miles on each side hear of it, and when we come around asking \$13.00 for 60 pounds, they think we are robbers. What is the result? There can be but one, and that is, they will not buy of us nor can they get it of the other fellow because he is gone. The consequence is, there is not nearly as much honey used as there would have been if these parties had kept near the regular price, or else sold it to some beekeeper that lives here and let him peddle it out. I have sold but one 60-pound can for less than \$13.00 to consumers, and most of it brought \$14.00 up to Feb. 9.

There is a beekeeper near me who sold all his honey before the holidays at \$15.00 for 60-pound cans. This man went to a party that was having a hard time getting rid of his honey by cutting prices and asked him what he would take for 1,000 pounds. He replied, asking the same price as by the single can. This beekeeper that wanted to buy the honey has a good truck and nothing to do; so he thought he could help his beekeeping friend dispose of the honey and also help himself in making wages in peddling it out.

I believe this county could and would use every pound of honey produced in it if properly worked. If I had trouble in disposing of my honey in a retail way at retail prices, I surely would produce less of it, or sell in a wholesale way at wholesale prices. I have never yet had enough to supply my trade, and I buy of others almost every year.

R. C. Clary.

Ft. Morgan, Colo.

It almost takes my breath away to think of a colony of bees consuming 200 pounds of honey, as stated in an editorial on page 203 of April Gleanings, and yet it would seem to be not far out of the way. If such is the case (and I can not doubt it), we see the necessity of keeping as few unproductive colonies as possible.



SIFTINGS

J. E. Crane

* * *

Carl C. Johnson, on page 218, gives an excellent method for finding a queen. However, we prefer a light box, a little larger than a brood-chamber, set up on legs about 12 inches from the ground, with queen-excluding honey-board or zinc nailed to the bottom. It is a great time-saver.

* * *

That "Automatic Feeder," mentioned on page 216 by Geo. S. Demuth, is an idea not only worth remembering but putting into practice. It has two distinct advantages over other feeders: It will feed a colony just as it needs feed thru the spring, without further attention from the beekeeper; and, when the feeder is no longer needed, the bees will fill it ready for next year.

* * *

The value of lime in producing clover is mentioned on page 202. There has been quite a little difficulty in getting farmers to use it about here, even when lime dust was offered for nothing by a marble-crushing plant near where I live. The action of lime is so slow that it does not seem to be appreciated by the mass of farmers. Alsike clover will grow on land containing but little lime, and even on land somewhat acid. The cultivation of this clover should be encouraged to the utmost.

* * *

It does one good to read the article by E. R. Root on "The Call of the Southland," which gives both sides, the advantages and the disadvantages of a southern climate. Too often only one side is given, and many are the disappointments that follow. How many new things do we find in traveling thru a section of country that we thought we knew all about by reading! It is, I believe, much easier for most writers to tell of the nice things of any section, especially if it pleases them, than to tell of the unpleasant things.

* * *

The season for spraying is again at hand. I wonder how many States have laws forbidding the spraying of fruit trees when in bloom. Dr. A. L. Melander treats this whole subject very fully on pages 210, 211. His

description of the effects of poison on the bees is quite true to our experience. I believe the loss to the country as a whole to be much greater

than generally supposed. We have lost hundreds of dollars from this cause. Fruit-growers, as a rule, do not yet seem to appreciate the value of bees in their orchards, and quite too many have not yet learned the remarkable value of the Golden Rule. As Dr. Melander suggests, "Corrective legislation will afford the quickest benefits to all."

* * *

On page 217, Miss Josephine Morse suggests Milkol as a cheap and effective repellent to be used with poison sprays where there is danger of poisoning bees. Should it prove from further use as effective as claimed, I am sure she will earn the gratitude of beekeepers everywhere. Let us test it very carefully this season. It would not seem to be difficult to do so. Dilute a small quantity of honey with water, say one part of honey to three of water, set this where bees will work on it freely for one day, and next morning set some out with Milkol added in the proportion of one pint to 100 gallons of the spray. Can Miss Morse tell us where it can be obtained? And while we are about it, we might try other repellents, such as carbolic acid or lime-sulphur solutions.

* * *

That is an interesting article by Morley Pettit, pages 204-206. I do not, however, agree with him as to why smoke quiets bees. I should put it in a little different way, and would say, "Smoke causes fright, and fright takes away all disposition to guard their hives." Fear makes cowards of us all. Few are the creatures that can entertain two conflicting emotions at the same time. The frightened horse forgets years of careful training and rushes wildly away—often to its own destruction. Even a frightened army is half beaten. In a very interesting old book, which I possess, I have read how one, Gideon, took 300 brave men, each carrying a trumpet, a lamp, and an empty pitcher, and crept up to a mighty army. Then they smashed the pitchers and with the trumpets shouted, "The Sword of the Lord and Gideon." That great army of Midianites were frightened out of their wits, and ran like a flock of sheep, or a colony of bees before the blast of a Jumbo smoker. Sometimes we find a colony so brave and heroic that smoke does not frighten the bees. What then? Why, we are sometimes the ones to run.

SINCE we returned home someone asked me, "Well, do you like California just as well as ever?" Indeed we do, "we" meaning not the editorial pronoun, but including the gentleman who shared the responsibility of counting bags, wraps, and umbrella when we left the train at our various stops. We love the Golden State in spite of the fact that, during our too brief stay within it, many foggy days veiled the mountain scenery, and some rainy days prevented interesting motor trips. I love it in spite of a bloodthirsty flea who inflicted an amount of anguish upon me all out of proportion to his size. (For all I know to the contrary, that flea is still alive, doing his best, or worst, to prevent the tenderfoot tourist from believing California is Paradise, for he was kicking strongly when he rode the whirlpool down the bathtub drain, where I consigned him after vainly trying to crush him with the heel of my shoe as a hammer. If the cat has nine lives, the California flea has a hundred.)

Perhaps if I should try to sum up the things which make me love California so much, it would be in the order named: the mountains, the climate, the perfect highways, and the flowers and fruit. By mountains I mean not only the great, snow-capped peaks, but also the foothills, canyons, and valleys with such wonderful scenery as the Yosemite, which I have not yet seen; and, instead of climate, perhaps the word should be climates; for, because of the hills and mountains and the contour of the ocean with its bays, there is often a fascinating variation of climate within a radius of two or three miles.

SATURDAY afternoon, after the luncheon, given by the Alameda Beekeepers' Association to the visiting beekeepers at the Hotel Oakland, we were invited by friends to accompany them to their home in Mill Valley, a commonplace name for what has seemed a veritable bit of fairyland to me ever since we had a glimpse of it on our way to the summit of Mt. Tamalpais a year ago. To reach Mill Valley we had to take a miniature sea voyage on the ferry from Oakland to San Francisco and another from San Francisco to Sausalito. Those ferries on San Francisco Bay leave with such clock-like regularity, they are so clean and pleasant, the view so delightful, and the bit of salt breeze so invigorating that the commuting business man does not pity himself at all. I have been told by friends who have used the ferry daily for many years that they never tire of it, and that the fresh air does much to keep them well. From Sausalito to Mill

HAPPY HOURS IN CALIFORNIA

CONSTANCE ROOT BOYDEN
(Stancy Puerden)

Valley is only a few minutes' trolley ride, and the car is always waiting at the ferry.

I must confess that I do not know the distinction be-

tween a valley and a canyon, nor can I find any help in the dictionary. Mr. Boyden tried to make me believe that the sides of a canyon are perpendicular or more nearly so than those of a valley; but we have visited many so-called canyons with sides no steeper than those of Mill Valley. My own idea of a canyon is a deep, narrow valley, and with that in mind I should describe Mill Valley as a great, curving, branching canyon with steep, beautifully wooded slopes which rise to a great height on either side, with attractive residences scattered on the steep hillsides and almost hidden by the trees and foliage, and with occasional glimpses of the elusive peak of Tamalpais peeping above the nearer hills. The peak is elusive because it has a way of swathing its neck and shoulders in a chiffon scarf of clouds and mists, hiding the sunshiny peak from those in the valley below; but the peak itself is nearly always in the sunshine.

Our friends have a beautiful home on the steep hillside perhaps 20 minutes' walk from the trolley station. The feminine half of the party took a taxi which climbed a road leading up the side of the hill, while the masculine half walked by a lower road. Had I realized the distance was no greater than it was, I too should have walked, for every bit of that valley is fascinating and unusual to Ohio eyes. As we stopped my friend remarked, "We came the back way to avoid the climb to the house from the road in front." The narrow mountain road on which we stood is perhaps about the height of the second story of the house, which is near the back of the lot, and we had to go down the hill a little way to reach the kitchen door. The kitchen seemed almost on a basement level, as the hill rises so steeply behind it; but, on going thru to the dining room and looking out of the wide window, the ground was so far below that it seemed like a second-story room, as indeed it is, for there is a high basement room below. Now, our lawn in Ohio is so level that there is no slope at all from the basement wall to the street. Perhaps that is one reason why that steep yard in Mill Valley seemed so picturesque to my eyes. It is certain that our friends do not have the problem of keeping a lawn mower oiled and sharp, for their whole lot is tilted at such an angle that one has to climb it from the street in front by a zigzag path interspersed by flights of steps. I believe Mr. Boyden said he counted 50 steps arranged in groups alternating with the aforesaid

zigzag path to the front of the house, and there is another flight of steps to gain the entrance porch at the living-room end of the house. At the opposite end of the house are some terraced beds where such plants are raised as do not readily cling to the steep hillside, and another flight of steps alongside leads to the kitchen from the front.

Their nearest neighbors across the road at the back of the house are so much farther up the hill that the basement of one house is about on a level with the top of the other. Across the lower road in front and high up on the opposite hillside showed the gables of another attractive home, but the trees were so thick that not until the lights were on in the evening did we realize how many houses dot the hillsides all the way up to the top. It is all so quiet and peaceful that it seems like a home in the woods.

A fog drifting into the valley threatened to cut short the daylight, so we went immediately out to the steep yard to see the flowers, of which I believe there were over a dozen varieties in bloom, altho it was early in March. It looked odd to see many of my favorites metaphorically digging their heels into the ground to keep from sliding down hill, but blooming just as cheerfully as if they were in my level Ohio garden. Geraniums and calla lilies practically grow wild in most parts of the State, and, while I do not care for the calla lily as a house plant, it is beautiful growing in a hedge which is a mass of bloom. There were pansies, violets, marigolds, camelias, irises, etc., and various shrubs and plenty of trees including oranges and lemons. I couldn't name them all if I tried, because I afterward saw so many other flowers in bloom in other places.

When we finally went into the house it was to wander from one window to another to see the view from the various points. The dining room is especially pleasant. I don't believe I could remember an article of furniture in it, altho I have an impression that it contains the conventional table and sideboard in some dark wood. But almost all one wall is taken up by a wide landscape window, so that from the table one has a wonderful view of the deep valley and high hills beyond. Unfortunately it was dark when we had our evening meal, but even so it was interesting to watch the lights flash out on the opposite hillside as dwellings were lighted. A resident of Mill Valley has the delights of country life on a thickly wooded hillside with the comforts of the city, for I noticed they have electricity, city water, good roads, efficient household workers by the hour, and probably many other conveniences which I did not see.

Among the few regretful memories of our trip is that we could not accept our hosts' invitation to stay over night and see sunrise in the Valley. A taxi had been

engaged to come and take us to the car, but it had some accident, so we decided to walk down to the station. Starting rather late we made quick time and incidentally found out the origin of the word "tenderfoot," at least, we believe we did. Having been married to a rapid walker for over a score of years, I pride myself on being able to keep up with him fairly well; but by the time we reached the car the muscles from my knees down felt most peculiar, so weak and painful in fact that I dreaded the car step and felt sure I should not be able to change ferries and walk thru the long corridors in the large hotel to our room, and as for walking the two or three blocks from the car terminal in Oakland to the hotel I just knew I could not do it. But on comparing notes I discovered that Mr. Boyden was suffering very similar symptoms, and we decided that walking down steep grades calls into action muscles which are seldom used in a level country, and that the ability to take the steep down grades at a rapid pace is one advantage the westerner has over the tenderfoot. I might add that we did regain our hotel room without the aid of an ambulance, but our efforts to walk with dignity and ease were about as strenuous as those of a drunken man.

IN our drives thru the various bay cities we saw many other ideal residence sites, in the Berkeley hills, in Piedmont, and in small canyons in the hills. I imagine the frequent fogs, which do so much to keep this region cool the year around, are very beneficial to vegetation, for the flowers and shrubbery are wonderful, not only around the homes but on the grounds of the University of California, which has such a picturesque location against the Berkeley hills. The Scotch heather was especially fine, and I thought the wild lilac even more beautiful than the cultivated variety. Around many of the homes in Piedmont I saw charming color schemes of lavender shrubs, purple and lavender cinerarias (which are greenhouse plants in the East), pansies, and violets.

Speaking of flowers, I never think of San Francisco without recalling the displays of flowers on stands at nearly every corner, even in the downtown business and wholesale districts and in the great ferry house. It is much the same in Los Angeles; but in the cooler climate of San Francisco it seems a little more remarkable, and Mr. Boyden tells me that it is the same the year around except that the varieties of flowers vary with the season.

As an instance of the fine roads, a friend took us, together with his wife and two little daughters, for an afternoon drive of 134 miles thru the Santa Clara Valley and back for dinner at his home, and we were not one bit tired. We went thru San Jose, beautiful Los Gatos in the foothills and Saratoga and called on friends who raise prunes and apricots and have a gorgeous

(Continued on page 309.)

As he watches a colony of bees thruout a year, the sideline student is impressed with four important outstanding activities. These are brood-rearing, the storage of honey, swarming, winter-clustering.

Brood-rearing in a normal colony begins in late winter and continues increasingly into early summer; then decreasingly thru late summer into autumn, when it ceases.

Nectar-gathering depends, of course, upon the presence of nectar in the fields or forests. It usually begins when the earliest spring flings the blossoms of the elms and red maples against the cloud-filled skies of February and March. It, too, continues increasingly into the spring—increasingly, yet not continuously, for often there are periods of practical dearth, as just after fruit bloom. It reaches its peak in the white-clover section when that most important plant itself comes into full bloom in May or June, decreasing as it wanes. It continues, however, with some irregularity, thruout the summer and fall, closing only when the early frosts finally become definite freezes and so write *finale* on the late-blooming asters.

The swarming tendency is chiefly characteristic of spring and early summer. Under certain conditions swarms appear either earlier or later, but May and June are the months most likely to see them issue.

Clustering is a phenomenon of winter. It is the normal method of heat conservation in the hive.

In reviewing the history of a colony, it is customary—and wisely so—to begin with the spring, when activity recommences after the long winter. Everything in the hive at that time is at low ebb—not many bees and not much honey. Brood-rearing, however, has already begun. For even before the first nectar appears in the earliest blossoms, the queen has started laying, so even by early spring there is brood in various stages in the guarded brood-nest at the heart of the hive, where the temperature is maintained fairly evenly at 95 degrees F. or a little less. In concentric rings she has deposited the tiny ivory specks, these rings growing constantly larger and appearing on more and more combs. The rapidity of this increase depends upon the amount of stores in the hive and the number of bees to care for the brood. As the earliest laid eggs complete their final development and emerge as bees, they leave empty cells ready for more eggs, while the new bees themselves add strength and numbers to the working force of the hive. Thus the brood-rearing activity can be rapidly increased and the brood-nest expanded.

For about the first two weeks of their

Beekkeeping as a Side Line

Grace Allen

lives these young worker bees are unable to take the long flights to the field for nectar, or for pollen or water. So at this age they are the nurses,

faithfully feeding the larvae; or they hang, a living consecrated curtain, producing the mysterious wax in what seems a very ecstasy of motionless effort; and they do the cleaning of the hive and the ventilating, and other home duties. When about a week old, wings are strong enough to allow them short flights around the hive. Beekeepers speak of the "play spell" of the young bees, when in the warm hour of the day they fly and hum so thrillingly around the entrance. And it has the feel of play, somehow, even tho it may be a fairly serious business, by which they not only gain strength but also become so familiar with their hive that they can readily locate it when a little later they come hurrying home from clover fields or blossoming trees. When they are about two weeks old, they begin this great work of their lives, garnering and storing the life-sustaining sweet hidden in living beauty. And still, while they pass thus from duty to duty, the queen continues to deposit eggs for still more workers; and eggs, also, to produce drones.

Then soon the day will probably come when the colony will be uncomfortably populous. And preparations for swarming will begin. Those who have studied these matters with that thoro-going, cool, definite precision that mere enthusiastic lovers sometimes lack, make no claim to understand positively the real scientific cause of swarming. But the general impression is that with these great numbers of young bees coming out every day, one or two or three thousand a day, things get crowded; perhaps, too, there isn't enough to do at home to keep these youngsters busy. At any rate, it is usually (not always, however) at about this time—May and June—thousands of young bees emerging daily, the queen laying heavily and nectar coming in rapidly—that preparations are made for swarming. This swarming instinct is most unique. In the natural state this is the only way new colonies are formed and the race perpetuated, perhaps increased. And the swarm itself is something more than unique, it is strangely thrilling and exciting and beautiful. And often—let us be honest—inconvenient—aye, and unprofitable.

The first step the bees make towards casting a swarm is the building of a goodly number of queen-cells. These are large and long, and in each one a tiny egg develops into a larva, which, fairly swimming in a wealth of royal jelly, grows to a size to be sealed over. Usually when one or two of

these first cells are sealed, comes the great day. And when the sun is high, probably at some time between ten o'clock and three, the swarm will issue. Out from the entrance of the hive they pour, living drops in a great flood of life. The air is quickly filled with wings and the sound of them. There they circle and swing and weave strange patterns in the sunlight. Then the watching beekeeper notices a shifting of the nebulous cloud, and presently is aware of a quiet dark ball forming on the branch of a tree. Soon they are all clustered there, hanging in almost ominous silence after the rapture of the moment before. Probably more than half the occupants of the hive are there, perhaps two-thirds of them, bees of various ages. And somewhere in their midst is their queen. Did she lead out the swarm or follow? Who knows? Probably the latter.

Anyway, there they are. And there they hang, perhaps for 15 minutes, perhaps for several hours, or even longer. The theory that scouts are going about hunting for the new home seems to be rather generally accepted, tho one sometimes wonders why they failed to do that necessary bit of reconnoitering earlier. At any rate eventually (and sometimes now) the dark cluster stirs and breaks, and again the air is filled with wings. But this time, instead of gayly whirling and circling, they start straight off towards the spot chosen for the new abode, a hollow tree or a cozy corner hidden under somebody's eaves. There they start housekeeping. The young bees hang in their strange rapture of silence and produce the wax to build new comb, the queen is soon laying in the fresh cells, field bees bring in nectar and pollen, and the whole cycle is started anew.

If the beekeeper be present when the swarm issues, he will take matters into his own hands and the bees will find themselves possessed of a hive instead of a hollow tree. When they are shaken or dumped into the new hive, wings start a glad fanning, little bodies are raised at a queer angle that somehow signals the others to come on, and soon they are all marching in.

After a swarm has left, a busy quiet settles on the old hive, known to the beekeeper as the "parent hive"—altho the real parent of the hive, the queen, has accompanied the swarm. Yet viewing the colony rather than the individual bee as the unit, it is true that the old hive is the parent. There the lessened numbers continue with their routine duties, undisturbed and apparently untempted by the exciting, adventurous departure of the others. There is now no queen. Yet order and perfect co-operation continue. For in the long rough cells the young princesses are attaining their final growth and development. And presently comes a day when the first one cuts out the end of her cell and emerges, her young slim restless body endued with powers and qualities so different from those of the

thousands around her. One of the first acts of her life will be the destruction of the other queens, still in their cells. As only one queen is ordinarily permitted in a hive, there is this deadly rivalry between them: when two queens meet, the stings that are apparently never used elsewhere are brought into immediate use. So when this first fortunate princess emerges from her cell, she leads—thus at least it seems to the human observer—the attack on the helpless rivals unfortunate enough to be a few hours later developing. Soon every one will have been killed, and the workers will have torn down the cells and dragged out the remains.

Sometimes, however, they do not permit this destruction. For if after-swarms are desired (they never are, by the intelligent beekeeper, but sometimes seem to be by the bees), then the other cells are carefully guarded from the attack of this first queen, and in a few days she herself is going off with a swarm, leaving the other cells to provide a queen for the remaining bees. These may send out still another swarm, and even several others, tho this is both unusual and disastrous.

When no after-swarms are planned, the remaining cells are destroyed. Then the first-issued queen lives about a week of carefree youth, while gaining the strength needed for her flight. Several times on different days she will venture into the air around the entrance, just as the young worker bees do, marking well the appearance and location of her home. Then on some bright day she will strike bravely out, straight up into the high places, for her nuptial flight. And when she returns, life will quietly settle into a matter of duty and routine.

By this time the bees are devoting themselves feverishly to an enthusiastic gathering of nectar. And when the main honey flow comes on (which may have happened before the swarm went out), the instinct that prompts them to store what they do not immediately need fills comb after comb with the nectar which is then evaporated and ripened into honey, and sealed.

All this activity, including of course the gathering of pollen too, continues thruout the summer, whenever there is anything at all in the fields. Some time in late summer when the nectar flow fails, or later, when the days shorten and the nights grow cool and long, comes the destruction of the drones. And soon autumn has come. Then it, too, goes an unreturning way, and winter lies over the beeyard.

It is in the winter that they form the cluster. For bees are not warm-blooded creatures; their body temperature rises and falls with the temperature of the air about them. By muscular exercise they can produce heat. But were they to get as cold as 45 degrees F., they would lose all power of motion, and death would doubtless soon ensue. So when the air in their hive gets as cold as 57 degrees, they take matters into

(Continued on page 314.)



FROM NORTH, EAST, WEST AND SOUTH

**In Northern California.**

The 32nd annual meeting of the California State Beekeepers' Association was truly a pretentious affair. April "Gleanings" acquainted you with the fact that the Governor of the State designated March 1 to 7 as California Honey Week. This proclamation proved universally beneficial, for it stimulated the consumption of honey to a very considerable extent. The attendance at the meeting was unusually good, and some of the sessions were attended by 400 to 500 persons. The credit for the success and the great enthusiasm displayed at the convention was due entirely to the efforts of the Alameda County Beekeepers' Association, and the president and secretary of this organization were duly rewarded by being elected to similar positions in the State Association. We look for big things at the next annual meeting. It was regretted, tho, that none of the Washington officials were present to advise us on some of the more knotty problems of beekeeping. Their presence was unquestionably missed, for at one of the sessions a petition was circulated, requesting a continuance of the winter short courses in beekeeping held jointly by the U. S. Department of Agriculture and the University of California Agricultural Department. Having a seat where I could view the beekeepers at this session, I noticed that every beekeeper present signed the petition. Prof. W. B. Hermes, head of the Division of Entomology of the University of California, gave us an outline of what he proposes to accomplish for the beekeepers of the State. His talk impressed us favorably, and we have reason to believe that California beekeepers are going to receive what they have long been waiting for, namely, aid in apiculture—aid worthy of the fair name of our university and of our State.

Low prices for honey and the continued high cost of production are the chief concerns of beekeepers today. It is presumed by most of us, according to present indications, that alfalfa honey will bring about 6 to 7c, and sage about 10 to 12c a pound—about half the value that our product brought us one year ago. On the other hand, when we analyze our expenses we find that our auto expenses have suffered practically no reduction, and that our labor and container accounts have undergone but a reduction of 10 per cent over last year's figures, and our other operating expense accounts remain materially the same. Beekeepers' supplies, our chief capital expenditure, are but little cheaper than they were a year ago. It seems that our best bet lies in creating more of a demand for honey. There is no other one thing we can do that will increase more the value of our product, unless it be a higher tariff, than to

popularize broadcast the good values of honey as a food. The United States is now a very wealthy nation, and many countries today, including some of the European ones, are sending us honey. Obviously this fact makes it all the more difficult for us to dispose of our product. The New Zealand Co-operative Honey Producers' Association, Ltd., seems to be more optimistic than we are in regard to honey prices. It is the understanding that this association will advance to its members for white and light-amber grades 12c per pound. Our Exchange, I believe, will not make an advance of over 6c per pound. We hope our New Zealand friends are correct in their interpretations of marketing conditions, but we are inclined to believe that our Exchange will place itself in a much more satisfactory position if it places its advance in the neighborhood of 6c.

Big Sur, Calif.

M. C. Richter.

* * *

In Southern California.

Since my last report some European foul brood has appeared. At no time since the first outbreak has it been found in so virulent a form as in a few places recently. Whole frames of brood will die within a few days. There appears to be no accounting for its return. The amount of stores seems to make no difference, as many afflicted colonies have an abundance of honey. Italian bees are supposed to be immune from this disease, but not so in the present epidemic. It is found among the colonies which had an abundance of early pollen, as well as among colonies that were located away from the early pollen and were late to start breeding. One thing is certain—it is here and the beekeepers have a fight on their hands again to eradicate it. Some cases of American foul brood are also found, but this has not gotten such a hold as the European.

The prospects for a crop over southern California are no brighter. The oranges are blooming, and the strong colonies are getting a little more than a living. The sages promise little or no honey; for the plants, in general, are suffering for moisture enough to give them a normal growth. The prospects for more rain are not at all encouraging, as the average rainfall after this date is very small. The alfalfa should furnish the usual amount, and the mesquite about the same. Beans, which have furnished considerable honey the past few years, have dropped in price so much that the acreage is likely to be very much reduced this year.

More bees have been moved to the oranges this season than ever before, one company alone having about 2,000 colonies. Generally speaking, the bees will hardly be up to normal for the early honey flow.



FROM NORTH, EAST, WEST AND SOUTH



Taken all in all, it is not likely that southern California will produce as large a crop as last season.

The prices of honey are likely to be much lower than last year, as there is considerable honey being carried over from last year's crop. The price of supplies has not dropped to any noticeable degree, and wages are now about the same as during the war.

Several prosecutions have occurred recently for moving or selling bees contrary to the State laws or the county ordinances. When operating as many as one or two thousand colonies, it is very difficult at all times to comply with all the requirements of the complicated rules and regulations. It is unfortunate that we cannot have a State law governing the moving of bees. Many beekeepers have only a few colonies, and yet they are the ones who have the most to say when it comes to law-making. Some larger apiaries are being kept; and, while the number of beekeepers may not be so great, the production of honey is greater, owing to the skill, knowledge, and general intelligence used in conducting the business. It is my opinion that producers will eventually get together and have laws enacted that will not only protect the industry but will also give a certain freedom of action in running the business.

Corona, Calif. * * * L. L. Andrews.

In Texas. The condition of the honey plants and bees in March has been above normal. The dry weather during the winter made it doubtful whether there would be an early spring flow, but the rains of the early part of this month have made bloom enough to allow the bees to produce brood early. In some of the southern counties swarming was common by the 10th. Where Demuth automatic feeders were used (see page 216, April issue), many hives now have two brood-chambers and a shallow super of brood; while where bees went into winter short of stores, such colonies have not even commenced to prepare for swarming. The horsemint, which was despaired of because of the drought, is now in a prosperous condition. The mesquite, which was thought to be good for a flow, is not in so good a condition owing to the rain. The Weather Bureau reports that the temperature for March was seven degrees above normal. The coldest day of winter occurred in November, 1920, when a temperature of 27 degrees was reached. Only during four periods did frost occur. This weather was such as to cause the bees to use enormous amounts of stores.

B. M. Caraway of Wyoming has started a new line of migratory beekeeping. He was unable to contract for queens at a price that suited him, so he picked up his suitcase and came to Texas. He expects to

raise between 1,500 and 2,000 queens to take back with him and to get back to the home place in time to catch the first honey flow.

Dr. Morris Fishbein, M. D., editor of the Journal for the American Medical Association, writes that honey has received its share of space in recent medical literature. Two long papers on the value of honey in medicine have been published in the past two years. They are entitled, "The Antiscorbutic Value of Honey," by H. K. Faber, published in the Journal of Biologie Chemistry; and "The Curative Properties of Nectar, Corn Pollen, and Honey in Avian Polyneuritis," by R. A. Dutcher and L. O. France, published in the same journal. He also states that honey needs no recommendation to the medical fraternity.

E. B. Ault reports the first extracting of new honey on March 7 when he obtained several thousand pounds of como and pink sage. This honey is from apiaries located in the Rio Grande Valley. He also reports the flow from huajilla in Duval County commenced March 10.

The response of the plants of the semi-arid lands to rainfall is extremely rapid and in a majority of cases certain. Last month it was stated that an early honey flow from mesquite was almost certain; and, in fact, in a few localities it did commence. The latter part of March a heavy rain fell, and, true to the habit of the desert plants, the mesquite buds ceased to open and the trees put out new branches and leaves. This habit of these plants comes from the fact that they must utilize moisture while it is available. Should dry weather occur in May or June, the food and energy will appear then in a heavy bloom. H. B. Parks.

San Antonio, Tex.

* * *

In Ontario.—In last month's Gleanings I drew attention to the fact that reports had been received stating that the consumption of stores in outside-wintered colonies had been abnormally heavy. Since then we have had an opportunity to give a superficial examination to probably over half of our bees, and we find every colony heavy with stores. Outdoor-wintered bees have fared the best this year, and many beekeepers report 100 per cent of the colonies alive and most of them in good condition. The season is about the earliest on record, and, barring a setback of cold weather in the near future, it looks as the fruit bloom, dandelion, etc., will be on at least two weeks earlier than usual. Personally, I would prefer a season more nearly normal, but we must take things as they come and work accordingly. Many are predicting heavy freezes later; but, with the ice all out of Georgian Bay, Lake Simcoe, and other waters to the north of us,



FROM NORTH, EAST, WEST AND SOUTH



one factor is removed that has a tendency to bring on late cold spells.

Reports on clover are quite varied. Yesterday I met Mr. Sibbald, who operates a lot of bees in Peel County just west of York County, where we live. He reports alsike as looking well, while here in our district all fields are damaged, and at least 50 per cent of the acreage ruined. A trip up the Midland line this week revealed the fact that the damage is very heavy to clover all the way from our place to Coldwater—some 75 miles. Around Beaverton where land is flat and the soil is a heavy clay, an extensive farmer told me that hardly an acre is left. Indeed the fields along the railway plainly showed the great damage done. I have no idea how general this condition is, but, so far as we are concerned, clover offers the poorest prospects for some years. Some have said that sweet clover will not "heave" out in the spring, but the contrary is nearer the truth. A mile north of us there is a field of sweet clover that was a mat of rank growth last fall. A few days ago no evidence of life could be seen from the road, so I stopped to see what was wrong. Practically every plant was heaved right up out of the ground and lying dead among the stubble. Many of the roots were 10 inches long, but the freezing by night and thawing by daytime had lifted them out, root and branch. This field is rather low and the soil is of a nature that causes clover to heave more readily than on higher land, so I am hoping that fields more favorably situated may be all right.

Alsike clover stands the spring test better than sweet clover or red clover, owing to the different nature of its roots; but, this year much of the alsike is ruined.

There is considerable interest here in Ontario in the Honey Producers' League and its development will be watched with interest. With falling prices in sight, and reports of good wintering general, producers on a commercial scale are beginning to wonder just what we may expect should we have a bumper crop. Sugar is firmer than earlier in the season, with prospects at least of being no cheaper for some time, if wholesalers have the right "dope" on the matter. Fairly dear sugar may have a stabilizing effect on honey prices to a certain extent—just how far is a debatable question. For the past five years it has not been a question of selling, but rather of producing. Who knows but that these conditions may be reversed for the next five years? Here in Ontario we have practically no organization at all, and, in my opinion, we never will until slow and low markets force us to do something. Personally, I am not strong on many phases of this organization question, but one of our greatest needs is for

a more equitable distribution of our product. In years of varied crops, that is, with heavy yields in some parts of the province and little honey in another part, I have known honey to go almost begging for a sale; while, less than 200 miles away, consumers could not get what they desired even at a much higher price than honey was bringing where the crop was good.

Markham, Ont.

J. L. Byer.

* * *

In North Carolina.—Bruce Anderson of Terra Ceia, Beaufort County, chosen president at the January meeting in Wilmington, has an aggressive program of activities for the North Carolina Beekeepers' Association for the current year, including particularly an exchange for the benefit of the membership. This has for its purpose the listing with the secretary, by members, of honey and bees they have for sale. Any members wishing to buy honey for their local trade, or bees to increase their apiaries, can also register with the secretary, so that those having surplus and those wanting to sell can be put in communication with each other. It is believed that a very great benefit will result.

There is a strong sentiment among the association membership for a state-wide campaign for impressing upon the housekeepers the great and practically indispensable value of honey as a food, one that should be on every dining table every day of the year. If this is worked out as is being recommended, the State Association will arrange for special articles and advertisements in the State press, and the local beekeepers will follow up with advertisements of their special products in their local papers.

The 1921 spring season has opened up in a remarkably auspicious manner, so far as prime condition of bees and the promise of abundant honey flows are concerned. Beekeepers have been especially busy for weeks seeing that colonies are in condition for maximum growth and that supers are ready for swift installation as the hive requirements develop.

State Bee Specialist C. L. Sams has been making the rounds of the different sections of the State this spring with all possible speed and is scheduled for the southeastern, or Wilmington-Goldsboro section the week of April 5-15. Wherever it is possible to arrange for them there are demonstrations in transferring bees from the gum and box hives to standard hives, and lectures and demonstrations in bee-yards are arranged practically everywhere he goes. In this way the passing of the old gum and box hives is being materially hastened.

Wilmington, N. C.

W. J. Martin.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Wiring Frames. Last summer during part of the season I used the "thousand dollar trick" in wiring frames, and then I happened upon the figure-14-method (see page 85, February Gleanings), which pleased me much better. I thought I was the originator of the idea.

I found the best way to tack the brace wire to the top-bar was to hook a double-pointed tack around it and then use a pair of wide-mouth pliers for squeezing it into the bar, one point being slanted into the edge of the foundation. The pliers straddle the top-bar, the lower jaw catching the tack. This is an easy, convenient way, besides avoiding the risk of bruising the foundation by pounding.

I. W. Cameron.

Davis, S. D.

Two Season- By inserting a comb contain-
able Hints. ing mostly drone-cells, or, if no such comb is to be had, an empty frame with starter only (which in a very short time during fruit bloom will be filled with beautiful drone comb with eggs and larvae) in the brood-nest of a colony known by their good qualities, you will stand a good chance of having drones that will improve the stock. If the brood combs in other colonies are all good worker combs, the chances are better still. Then by breeding queens also from the best stock you will be following the way of our dear departed Dr. Miller.

A colony of bees will swarm sooner when there are not enough bees to carry on super work, thus storing more honey around the brood-nest than a strong colony that has most of its brood combs filled with brood, many young bees emerging daily, and workers busy both in the fields and in the supers. If the colony light in bees had been given empty combs in the super instead of foundation, work would have been carried on in the super, relieving the brood combs of surplus honey, thus retarding swarming if not preventing it altogether. The folly of trying to get bees to draw foundation when the colony contains too few bees is very plain to be seen. All such should be given empty combs to store in.

A. C. Gilbert.

East Avon, N. Y.

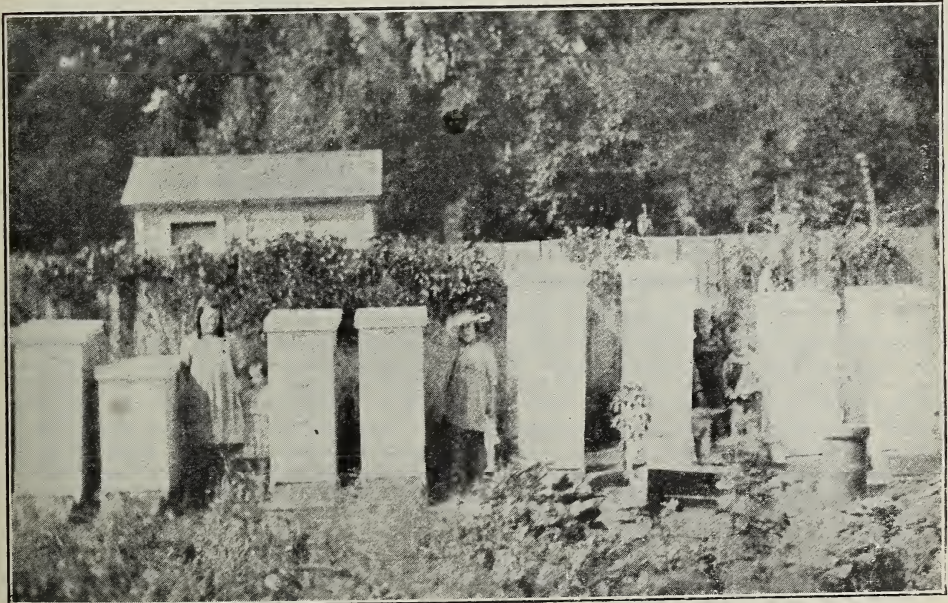
Refused \$1000 This is the way my children are afraid of bees.

for 23 Colonies. They play around the hives as tho there were no bees there. We did not have a natural swarm this year.

I was offered a check for \$1000 for these 23 colonies (just as they stand in the picture) and an old two-frame extractor, but I said, "no." The 23 colonies had 74 supers which were 10-frame standard hive-bodies. Well, when fall came I had 4160 pounds of honey, which we sold for 25 cents per pound, amounting to \$1040. Last year the same bunch brought us over \$1200.

Scotland, S. D.

O. G. Borton.



Part of the 23 colonies which the owner refused to sell for \$1000.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Deep Tunnel Prevents Clogging. I notice on page 101, February Gleanings, that Carl E. Johnson uses a tin tube to prevent clogging of the entrances of his hives; and also, on page 154, that J. E. Crane uses a similar plan. In connection with my quadruple cases, I have a plan which takes care of clogging without any extra apparatus. My tunnel is $1\frac{1}{4}$ inches deep on inside and made of $\frac{3}{4}$ -inch stuff, and is so adjusted that the bottom of the tunnel drops down to the lower edge of the bottom-board. This gives room for two

rows of holes $\frac{3}{8}$ inch in diameter. I bore five in the case along the bottom of the tunnel and four near the top.

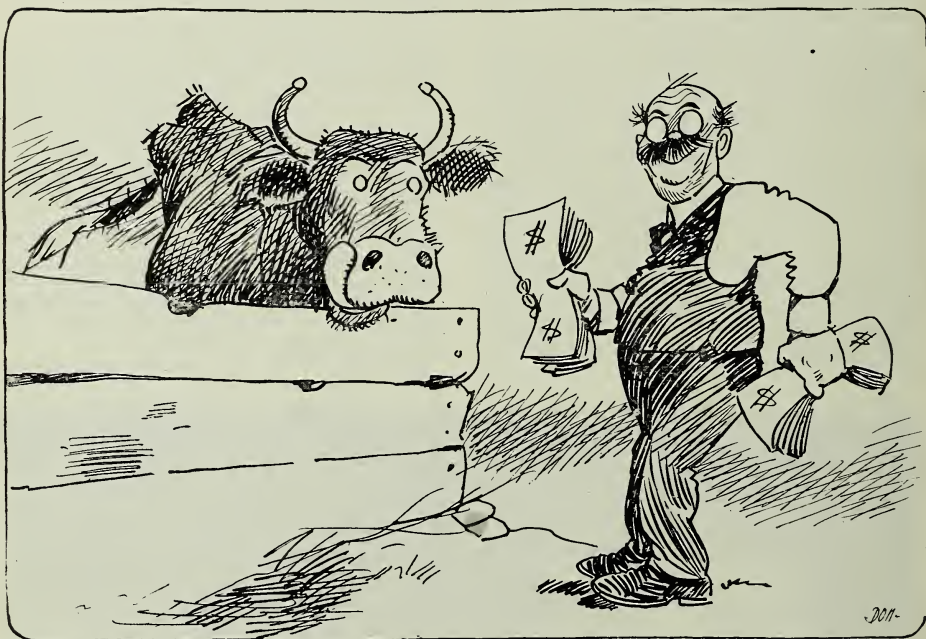
My cases have 4 inches bottom packing, 8 inches side packing, and 12 inches on top of a two-story hive. With this amount of packing there is not much accumulation of dead bees; and the full entrance to the hive, the deep tunnel, and the double row of $\frac{3}{8}$ -inch holes seem to take care of this in good shape.

H. C. James.

Wooster, O.

My Queens.—By Bill Mellvir

(With apologies to Walt Mason.)



I have some old flea-bitten queens who work the laying graft so strong that, day and night, behind the scenes, they keep a plugging right along. They're shelling out the eggs so fast, that brood extends from roof to floor; and when they've filled all cells at last they fuss around and hunt for more. But if in vain for room they strive, my noble queens create a storm. They spread dissension thru the hive and finally decide to swarm. I fool these old birds nowadays; I fool them to a fare-you-well. I steer them from their erring ways before they get this swarming spell. I never let such tommyrot into their little noodles bob; I help their sanity a lot by giving them another job. Before they're crowded from their homes and spill the everlasting beans,

I give another set of combs to satisfy ambitious queens. My queens, thus freed from narrow bounds, upstairs on eager legs will go, where buoyantly they make their rounds and lay a pint of eggs or so. The workers too hit up their gait, if any were inclined to shirk. They feel the urge like any skate who takes an interest in his work. He is indeed a foolish gink who puts off duties such as these. These extra eggs per hive, I think, will add an extra peck of bees. An extra peck of bees in June in each and every seething hive, in my location's quite a boon and makes me glad to be alive. The increase in the bunch of dope these extra pecks put in the mow, when sold, will make a roll, I hope, that's big enough to choke a cow.

WHO'S WHO IN APICULTURE

At the close of the season for the regular meetings of the various state associations we have again corrected our page of "Who's Who in Apiculture," bringing it down to date as of March 10. Beekeepers should keep this page for reference. Great care has been taken to have these data correct, the information having been secured wherever possible directly from a state official or from the college of agriculture.

State or Province	Beekeeping Taught in * Agrl. College	Foul Brood Law?	Net Weight Law?	State Inspector or Deputy.	Secretary State Association.
Alabama	Yes	No	No	None.	M. C. Berry.....Hayneville
Alberta		No			
Arizona	Yes	Yes	No	L. Earle Matteson....Benson	Geo. M. Frizzell.....Tempe
Arkansas	Yes	No	No	None.	Frank Horsfal.....Monticello
British Columbia	No	Yes	Yes	W. J. Sheppard.....Nelson	John Brooks.....Vancouver
California	Yes	Yes	Yes	County System.	L. W. Lasell.....Oakland
Colorado	Yes	Yes	No	Wesley Foster, Dep..Boulder	W. P. Collins.....Lamar
Connecticut	Yes	Yes	Yes	Dr. W. E. Britton, New Haven	L. S. C. Burr.....S. Manchester
Delaware	No	No	No	Wesley Webb, Acting..Dover	None.
Florida	Yes	Yes	Yes	Wilmon Newell.....Gainesville	K. E. Bragdon.....Cocoa
Georgia	No	Yes	Yes	A. C. Lewis.....Atlanta	Mrs. Madge Merritt, Brunswick
Idaho	No	Yes	Yes	W. H. Wicks.....Boise	P. S. Farrell.....Caldwell
Illinois	No	Yes	No	A. L. Kildow.....Putnam	G. M. Withrow.....Mechanicsburg
Indiana	Yes	Yes	Yes	F. N. Wallace, Indianapolis	C. O. Yost.....Indianapolis
Iowa	Yes	Yes	No	F. B. Paddock.....Ames	F. B. Paddock.....Ames
Kansas	Yes	Yes	No	J. H. Merrill.....Manhattan	O. F. Whitney.....Topeka
Kentucky	Yes	No	No	None.	H. Garman.....Lexington
Louisiana	No	No	No	None.	E. C. Davis.....Baton Rouge
Maine	No	Yes	Yes	Frank H. Dudley...Augusta	F. L. Mason.....Mechanic Falls
Manitoba	Yes	Yes	No	J. H. Kiteley.....Winnipeg	J. H. Kiteley.....Winnipeg
Maryland	Yes	Yes	No	E. N. Cory.....College Park	E. N. Cory.....College Park
Massachusetts	No	Yes	Yes	Leland Taylor.....Boston	Mrs. H. N. Thomas.....Wollaston
Michigan	Yes	Yes	Yes	B. F. Kindig.....E. Lansing	R. H. Kely.....E. Lansing
Minnesota	Yes	Yes	Yes	C. D. Blaker.....Minneapolis	O. L. Wille.....St. Paul
Mississippi	Yes	Yes	No	R. W. Harned, Agri. College	R. F. Dunn.....Greenville
Missouri	Yes	Yes	No	?	Dr. L. Haseman.....Columbia
Montana	Yes	Yes	Yes	(Not yet appointed)	R. A. Bray.....Big Timber
Nebraska	Yes	No	Yes	None.	O. E. Timm.....Bennington
Nevada	No	Yes	Comb	Geo. G. Schweis.....Reno	L. D'A. Prince.....Reno
New Brunswick	No	Yes	No	L. T. Floyd.....Fredericton	L. T. Floyd.....Fredericton
New Hampshire	Yes	No	No	None.	H. B. Stevens.....Durham
New Jersey	No	Yes	Yes	E. G. Carr.....New Egypt	E. G. Carr.....New Egypt
New Mexico				None.	None.
New York	No	Yes	Yes	G. G. Atwood.....Albany, N. Y.	J. H. Cunningham...Syracuse
North Carolina	Yes	Yes	No	None.	W. J. Martin.....Wilmington
North Dakota	No	No		None.	None.
Nova Scotia	No	Yes	No	W. H. Brittain.....Truro	None.
Ohio	Yes	Yes	Yes	E. C. Cotton.....Columbus	Jas. S. Hine, O. S. U., Columbus
Oklahoma	Yes	Yes	No	R. L. Blackwell.....Oklahoma	Mr. Howard.....Wewoka
Ontario	Yes	Yes	Yes	F. Eric Millen.....Guelph	F. Eric Millen.....Guelph
Oregon	Yes	Yes	Yes	County System.	H. A. Scullen.....Corvallis
Pennsylvania	Yes	Yes	Yes	J. D. Sanders.....Harrisburg	Chas. N. Greene.....Troy
Prince Edw'd Isl.	Yes	Yes	No	H. Newson.....Charlottetown	None.
Quebec	Yes	Yes	No	C. Vaillancourt.....Quebec	J. A. Prud'homme, Ste. Philom.
Rhode Island	No	Yes	Yes	A. E. Stene.....Kingston	E. D. Anthony.....Barrington
South Carolina	Yes	No	No	A. F. Conradi.....	None.
South Dakota	Yes	Yes	Yes	L. A. Syverud.....Yankton	
				Ernest W. Fox.....Fruitdale	J. C. Tjaden.....Vermilion
Tennessee	Yes	Yes	Yes	J. M. Buchanan.....Franklin	G. M. Bentley.....Knoxville
Texas	Yes	Yes	Yes	C. S. Rude.....College Station	Miss A. Hasselbauer, S. Antonio
Utah	Yes	Yes	Yes	F. B. Terriberry, Salt Lake C.	F. B. Terriberry, Salt Lake City
Vermont	No	Yes	Yes	E. G. Brigham.....Montpelier	E. W. Larrabee.....Shoreham
Virginia	No	No		None.	W. J. Schoene.....Blacksburg
Washington	Yes	Yes	Yes	Dr. A. L. Melander..Pullman	E. E. Starkey.....Prosser
West Virginia	Yes	Yes	Yes	M. K. Malcolm.....Charleston	Will C. Griffith.....Elm Grove
Wisconsin	Yes	Yes	Yes	S. B. Fracker.....Madison	H. F. Wilson.....Madison
Wyoming	No	No	Yes	None.	None.

United States, Investigation and Demonstration in Beekeeping, E. F. Phillips, Apiculturist, Bureau of Entomology, Washington, D. C.

National Honey Producer's League, H. J. Parks, secretary, P. O. box 838, San Antonio, Texas.

Dominion of Canada, Investigation in Bee Culture, F. W. L. Sladen, Dominion Apiarist; Central Experimental Farm, Ottawa, Can.

*Beekeeping taught also in some other colleges and schools in Arkansas, California, Louisiana, Massachusetts, Minnesota, North Carolina, Ohio, Prince Edward Island, Quebec, Tennessee and Texas.

QUESTION.
—Being away from the apiary at the time the swarm issues, how can I tell accurately which colony the swarm came from?
J. T. Wilson.
Kentucky.

Answer.—You may be able to tell by noting the bees at the entrances of the hives. A colony which has just cast a swarm usually has but few bees going to and from the hive and not so many bees around the entrance. If you can not tell this way, you should be able to find the colony that has just swarmed by looking into the supers, for they are usually somewhat deserted after the swarm issues. When you find the colony which you think has swarmed, open the the hive and look for queen-cells. Sealed queen-cells, together with a greatly reduced number of workers, are usually sufficient evidence that the colony has swarmed.

PRODUCING COMB HONEY ON TWO-STORY HIVES.

Question.—Should I put the comb-honey super on top of my two-story hive or should I take off the upper story first?
Arthur Newcomer.
Pennsylvania.

Answer.—It will be much better to reduce the hive to a single story before giving the comb-honey supers, since if this is not done the bees do not begin work in the comb-honey supers promptly; and, unless the honey flow is good, they may refuse to work in them at all, but crowd the honey into the two brood-chambers. When reducing the hive to a single story, the combs should be sorted, and most of the brood put into the brood-chamber that is left. The other hive-body, which contains some brood and honey, should be placed on top of some weaker colony not used for comb-honey production, first shaking most of the bees from the combs, shaking them back into their own hive.

PREVENTION OF INCREASE.

Question.—Could I double up swarms, new and old, to prevent increase? Would cutting out queen-cells stop swarming, or does this endanger the colony's becoming queenless?
A. C. Stindt.
Minnesota.

Answer.—Yes. Hive the swarm in a new hive on the old stand, as described in "Talks to Beginners" in this issue; then, instead of moving the hive to a new location a week later as there described, set it on the other side of the swarm, turning its entrance away from that of the swarm at first, to prevent the returning bees of the parent colony from finding their hive after it has been moved, thus compelling them to unite with the swarm. Later, turn the entrance of the parent hive toward that of the swarm so the two hives stand side by side. At the close of the honey flow, take off the supers, spread a sheet of newspaper over the brood-chamber of the new hive, punch a few pin holes thru the newspaper, then set the old brood-chamber (without

GLEANED BY ASKING

Editors

bottom) on top of the new hive. By killing the old queen before this is done, you will decide which queen is to remain instead of letting the bees decide

this. This plan should result in splendid colonies for winter.

COMB-HONEY SUPERS AND FOUL BROOD.

Question.—Please tell how to get rid of foul brood in comb-honey supers without destroying the sections and full sheets of foundation in them. Is there any way of fumigating?
Paul B. Gilbert.
Ohio.

Answer.—You do not tell whether you refer to American foul brood or to European foul brood. If European foul brood, no treatment is necessary, these supers probably being as safe to use again as tho they had not been used before. If you refer to American foul brood, there is no practical way known to kill the spores of this disease by fumigation. If the comb-honey supers do not contain any honey, the danger of transmitting American foul brood by using them again is probably not very great, if they are scraped clean and have not been daubed with honey from the diseased colony; but, if combs have been built and honey stored in some of the sections, it will not be safe to use these.

SHALLOW EXTRACTING SUPER ABOVE SECTIONS.

Question.—How will it work in comb-honey production to use a shallow extracting super over the brood-chamber; then when the time comes to put on sections, set the shallow extracting super over the sections, with a queen-excluder between the shallow super and the sections; and when all the brood has emerged in the shallow super, move it back on top of the brood-chamber?
North Carolina. Douglass Laughlin.

Answer.—This should work well, so far as a prompt beginning of work in the sections is concerned, especially if the shallow extracting super is well filled with honey and brood at the time the comb-honey super is given; but, if left on long, the bees will use some of the dark wax from the brood combs in the shallow super in building comb in the sections. They also soil the sections badly within a short time when brood is placed above them. For this reason it is better to take off these extracting supers, either at the time the comb-honey supers are given or a few days later, and tier them up on top of some weaker colonies not being used for comb honey. They can then be given back to the colonies after the comb-honey supers are removed. When one of these shallow extracting supers filled with sealed honey of good quality is given to each colony at the close of the season, good colonies for winter are practically insured in all colonies that are normal and have a good queen.

QUEEN TRAPS FOR SWARM CONTROL.

Question.—If I use a queen trap, then kill the old queen when a swarm issues, letting the bees go back into the old hive, would they stay or would they come out again? C. E. Laffin.

Illinois.

Answer.—They would stay until after the first young queen emerges, when they would again attempt to swarm, this usually being about eight days after the first swarm issued. If you destroy all but one of the queen-cells about seven days after the first swarm issued, there usually is no further attempt to swarm; but occasionally even when this is done, the colony may swarm, tho this does not often happen. If the queen trap is left on and swarms are permitted to issue when the young queens begin to emerge, the trap will catch the young queen each time and the swarm will return unless it should unite with another swarm having a queen which happened to be out at the same time; but the colony may attempt to swarm day after day until there is but one young queen left within the hive. At this time the queen trap should be removed to permit the remaining young queen to mate. This method for swarm control is not to be recommended, for while the bees are attempting to swarm every day they usually do very little work.

LEAVING UNSEALED BROOD WITH ARTIFICIALLY MADE SWARMS.

Question.—If I leave the old queen with four frames containing the most larvae and eggs on the old stand, first shaking these four combs nearly clean of bees, then move the old hive to a new stand, would the colony on the old stand swarm if cells are left or would the half-empty hive discourage them? In the parent colony which was moved away would the first young queen out destroy the rest of the queen-cells? Leon Stafford.

New York.

Answer.—If queen-cells have already been started in the four combs of brood left in the hive on the old stand, the bees, in most cases, will finish them and swarm on schedule time, in spite of the empty space in the brood-chamber. Even if all of the queen-cells are destroyed on these four combs, the bees may immediately start other cells and swarm later when as many as four combs of brood are left, if the tendency to swarm is strong. If no queen-cells are left and these four combs are taken away three or four days after the colony is treated as you describe, the colony should not swarm during ordinary seasons. In this event the brood-chamber should be filled out with either empty combs or frames of foundation at the time of treatment, and when the remaining four combs of brood are removed later the space thus made vacant should again be filled. For comb honey, frames containing full sheets of foundation are preferable for this, but for extracted honey either frames of foundation or empty combs may be used.

The parent colony which was moved away is, of course, depleted by its field bees returning to the old stand, and, if the

young queens are ready to emerge at the time the hive is moved away, this colony will usually give up swarming and permit the first young queen that emerges to destroy the other queen-cells; but if the first young queen does not emerge until several days after the hive was moved away, so many young bees will have emerged that the colony is almost sure to swarm.

PUTTING PACKAGE BEES INTO HIVES.

Question.—When my two-pound packages of bees arrive, how shall I proceed to put them into the hives? Shall I give them drawn combs or foundation? Theodore C. Goetz.

Connecticut.

Answer.—Before the bees arrive the hives should be prepared to receive them, each located where it is to stand permanently, and each one supplied with as many drawn combs as there are pounds of bees in each of the packages. If drawn combs can not be had, full sheets of foundation may be used.

When the bees arrive they should be kept in a cool place until late in the afternoon. If they were shipped in the new-style cages, which have a frame containing foundation and the feeders, set them close beside the hive and blow a little smoke over the wire-cloth top to drive the bees down. Now remove the cover carefully. Take out the stays that hold the brood-frame in place. Then lift the frame out and place it with the feeder in the hive next to one side, and shove the other frames up to it. Be sure that the queen is on this frame with the bees. What bees are on the sides of the shipping-cage should be shaken out on the ground close in front of the hive. They will join the other bees in a few minutes, and what few take wing when the shipping-cage is first opened will go in with them. Two or three days later the feeder should be taken out of the frame. If the bees are shipped in the old-style cages, they should be fed a thin syrup thru the wire cloth as soon as they arrive. To make this, mix sugar and water, two parts of sugar to one of water, and stir it till dissolved. Moisten a sponge or a piece of cotton with the syrup and paint the surface of the wire cloth with the syrup. Keep feeding in this way as long as the bees will take it. To put them into the hives shove the frames to one side of the hive and place the package of bees beside the frames. Then pry off the lid from the package. The bees will leave the cage and take possession of the frames in a short time. This should be done toward night, not during the middle hours of the day, as they might swarm out. As a further precaution, a piece of perforated zinc should be put over the entrance for a few days. A brood-frame filled with honey given to them when they are first made up is the best feed that they can have. If you do not have this they should be given about a tea-cupful of syrup daily until there is the equivalent of one full frame stored ahead.

PENNSYLVANIA

has just enacted a new foul brood law, which makes it unlawful to ship bees, hives, or appliances into the State unless accompanied by a certificate of inspection signed by a certificate of the state or county from which they are shipped.



nish a system whereby the beekeepers can co-operate in educational work, marketing honey and apriary products, and the purchasing of supplies. R.

P. Dunn, Greenville, Miss., is secretary-treasurer of this association.

* * *

The United States Civil Service Commission announces an open competitive examination for apicultural assistant, applications to be rated as received until June 30, 1921.

* * *

A swarm of bees is reported to have issued from a two-story hive having brood in both stories at Elwood, Ind., on March 15. This report has been verified by J. H. Rigor of that city. On March 25 a colony of bees belonging to Geo. W. Fetzner, Allentown, Pa., cast a swarm, the brood-chamber being almost completely filled with brood.

* * *

The Oregon State Beekeepers' Association, which first met last fall in Salem, Ore., and effected temporary organization, met on March 16 and 17 in Portland, Ore., and became a live permanent organization. Owners of more than 4,000 colonies were present, and yet none of the really large producers were there to report. Over 150 joined the association, and many live topics were discussed. County organizations are being organized, Linn-Benton, Clackamas, and Multnomah counties already having perfected county organizations, which are to become a part of the state organization. H. A. Scullen, Corvallis, Ore., is the enterprising secretary of the State association.

* * *

The heaviest damage to fruit from freezing occurred in the south central sections of the country from the lower Great Plains eastward. The damage was probably not very great in the northern border States except the injury to cherries and peaches in New York and to apples in Ohio. Much fruit was killed as far south as parts of North Carolina, northern Georgia, and northern Alabama. Additional injury is reported from Colorado, Utah, and portions of New Mexico and Arizona. Considerable damage is reported from California and Oregon. There was some damage to alfalfa and clover in the Northwestern and the Central States.

* * *

The Mississippi and Yazoo Delta Beekeepers' Association has recently completed their organization and adopted plans to push the sale of honey by organized effort and putting up honey in attractive packages. The organization is planned to fur-

The Cook County Beekeepers' Association was organized at a meeting of 150 local beekeepers on March 21, at the Great Northern Hotel, Chicago. It is expected that monthly meetings of an inspirational and educational character may be held during the winter and spring, with field meetings for demonstration at members' apiaries during the summer months. The purpose is stated to be that of making better beekeepers of all its members and of protecting the industry in this section against the menace of disease. A. C. Gill, 230 West Huron St., was elected secretary-treasurer.

* * *

The tree planting committee selected by the American Honey Producers' League is planning to co-operate with the state highway commissions of the various states in regard to planting nectar-bearing trees along state highways. It also plans to work thru the various rural planting committees, national and state foresters, conservation commissions, lumber and forestry associations, state horticultural societies, and other agencies and individuals interested. It is the plan of this committee that each state association shall appoint a state tree planting committee and that these state committees shall arrange for a tree planting committee in each county.

* * *

Advance census figures, received to date, show the number of beekeepers and colonies of bees as follows:

	Beekeepers		Colonies	
	1910	1920	1910	1920
Alabama ...	23,911	25,266	135,140	153,766
Delaware ...	1,119	446	6,410	2,976
Dist. of Col. ...	13	4	151	19
Idaho ...	2,368	3,416	21,903	35,900
Maine ...	1,371	2,009	7,592	12,639
Maryland ...	4,186	2,720	23,156	16,117
Ohio ...	23,203	17,250	98,242	105,675
Rhode Island ...	285	163	1,267	686
Tennessee ...	27,706	30,961	144,481	191,898
Utah ...	1,873	1,453	26,185	25,061
Vermont ...	1,124	1,038	10,215	10,024
Washington ...	5,886	8,068	33,884	56,806
W. Virginia ...	24,035	18,620	110,673	89,873
	117,080	111,419	619,299	701,440

It will be noted that the number of persons reported as keeping bees in 1920 is less than the number reported in 1910, but the number of colonies is greater. These figures are for bees on farms only, the holdings of those living in cities and villages not being included.

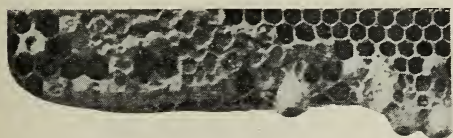
In the spring when conditions are favorable for brood-rearing, the bees will increase the amount of their brood with surprising rapidity until they may have as many as 10 to 15 combs fairly well filled with brood. Such extensive brood-rearing does not last long, and many colonies do not reach more than seven or eight combs of brood, even at the height of spring brood-rearing. As this brood emerges the colonies soon become so strong that, if extra room is not given, the bees may not all be able to stay within the hive during warm nights, but may cluster in large masses on the outside.

This is the time that the instinct to swarm is aroused in the colony, and the period of most extensive brood-rearing in the spring is usually followed by swarming. Beekeepers speak of this as the swarming season. While colonies may swarm later in the season if similar conditions are present, most of the swarming of the season occurs as a climax to the great expansion of brood-rearing in the spring.

How Bees Prepare for Swarming.

The rearing of drones is probably a remote and indefinite step in the preparation for swarming; but, so far as the beekeeper is able to see, the first definite preparation the colony makes is that of starting queen-cells.

In some of the southern States, queen-cells built preparatory to swarming may be found in some of the strongest colonies as early as March and April, but in the North they usually are not built until May or June.



Queen-cells being built.

Queen-cells are usually built along the lower edge of the comb and are so constructed that the opening of the cells is downward, thus making these cells nearly vertical instead of nearly horizontal, as are the worker-cells. Frequently partially built queen-cells or "cell cups," which are empty, may be found along the lower edge of the combs. These are sometimes built long before eggs are placed in them in preparation for swarming, and are therefore not necessarily significant as indicating a desire to swarm. Finally several of these cell cups are built and eggs are laid in them. This means that the colony is now definitely preparing to swarm unless the queen is old and failing, in which case it may mean that the bees are rearing

TALKS TO BEGINNERS

By the Editor

another queen to take her place. With normal colonies having a normal queen, the starting of queen-cells means that a swarm may be expected to issue

eight or nine days from the time the eggs were laid in the queen-cells.

The beginner can follow the entire program, as carried out by the bees, by watching the development of these queen-cells. Usually the swarm issues at about the time the more advanced of these queen-cells are capped, tho Italian bees sometimes swarm earlier, and bad weather may compel the bees to wait until later.

Prime Swarms and After-Swarms.

When the swarm issues under these conditions the old queen goes along, leaving behind the immature, young queens in their cells. Enough bees stay in the old hive to take care of the brood, which at this time is emerging so rapidly that the parent colony soon has quite a force of bees again. If the prime swarm issued on schedule time (when the first queen-cells were capped), an after-swarm may be expected from the parent colony about eight days later, the after-swarm being accompanied by one of the recently emerged young queens. If the beekeeper does not interfere to prevent it, usually several after-swarms issue, one coming out every day or two, until the colony is so depleted that there are no longer bees enough to divide up among the remaining young queens. Usually but one of these young queens is at large in the hive at a time, the others being held prisoners within their cells, tho sometimes two or more young queens may go out with an after-swarm. Finally, when no more swarms can be sent out, all but one of the young queens are killed, the surviving one being destined to become the new mother of the colony.

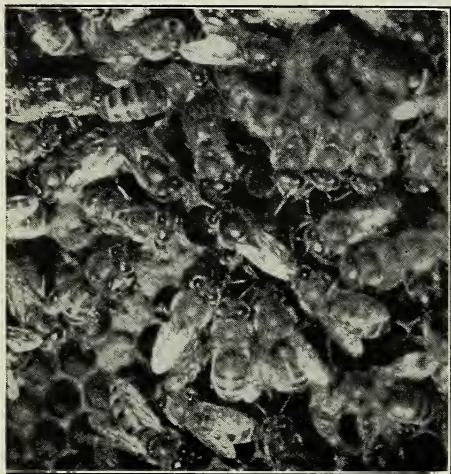
Swarming Undesirable.

If the bees are permitted to carry out their own program completely as to swarming, it usually means a loss of the honey crop from the colonies that swarm, since the great army of workers which filled the hive to overflowing at the beginning of the honey flow is dissipated by swarming. The bees should not be permitted to divide their working force just before or during the honey flow, and the beginner must learn to prevent this.

Clipping the Queen's Wings.

Preparatory to taking care of any swarms that may issue, it is advisable for the beginner to find the queen in each hive and clip off the greater portion of the wings on one side. This is to prevent the queen from flying when a swarm issues, thus giving the beekeeper control of the swarm if it should choose to cluster in the top of a high tree

or fly away to the woods. The same control may be had by using a queen and drone trap, with the advantage that the trap automatically catches the queen; while, with a clipped queen, it is necessary to find her on the ground in front of the hive when a swarm issues. The ambitious beginner should learn to clip his queens, however.



Queen laying and her attendants.

and, in the northern States especially, now is a good time to do this. For detailed directions for finding and clipping the queens, see Morley Pettit's article in this issue.

To Prevent Swarming When Producing Extracted Honey.

If extracted honey is being produced, the first super should be put on some time before the beginning of the main honey flow. In fact, if empty combs are available a super of empty combs should be given as soon as the brood-chamber is fairly well filled with brood, honey, and pollen. The queen-excluder should not be used between the brood-chamber and the super at this time, but the queen should be permitted free range thru both stories. This should prevent early swarming.

If empty combs are not available for this first super, frames filled with full sheets of foundation should be used, but these should not be given until the bees commence gathering enough nectar to cause them to begin to build new white wax on the darker combs in elongating and repairing the cells. When foundation must be used some of the combs of brood from below should be placed in the middle of the second story. This affords an opportunity to place four frames of foundation adjacent to four combs of brood, two in the upper chamber and two in the lower chamber. As soon as the bees have drawn out the foundation in these four frames so that they now really contain combs with shallow cells, these newly built

combs can be moved toward the side of the hive, and other frames, which the bees have not yet worked on, put in their places. These new combs are built out better in the second story, and it is well to have most of this work done there.

As soon as new honey is being stored fast enough so that the second story is nearly filled with brood and honey, another super should be placed on top of the hive, making it three stories high. If empty combs are available, eight of these may be used in this 10-frame super, the combs being spaced farther apart so each comb will hold more honey; but, if foundation is used, the frames should not be spaced so wide until after the combs are built out. When foundation is used in the second super, at least two combs from the first super should be placed in the second super to induce the bees to begin work there promptly.

About a week after the beginning of the main honey flow or after the queen has abandoned the lower story long enough so that the brood there has all been sealed, the queen should be put down into the lower story and confined there by a queen-excluder, which should be placed between the first and the second story. The queen will usually be found in the second story at this time.



Fig. 1.—New hive with supers on old stand. Old hive turned aside.

To find her, lift off the third story if one is on the hive; then, without smoking the bees in the second story more than necessary, lift it off and set it on the inverted hive cover in such a manner that the bottom-bars of the frames do not touch the rim of the cover, to avoid crushing bees. By examining these combs one by one, the queen should be found, picked up by the wings, and placed in the lower brood-chamber.

In reassembling the hive after the queen has been put down, the queen-excluder should be placed over the lower brood-chamber; the super which was formerly the third story should be put on as the second story; and the former second story, which contains most of the brood, should be put back on top as a third story. If more room is needed at this time, an additional super may be given, in which case the former second story, being placed on top, now becomes the fourth story.

Ten days later it may be well to destroy

all the queen-cells that are built in this top super, tho this is not always necessary.

Colonies treated in this way usually do not swarm if additional supers are given as fast as needed, tho they may do so if the honey flow is long.

To Control Swarming When Producing Comb Honey.

When producing comb honey, the first super should be given when the bees begin to add new white wax to the old dark combs in the brood-chamber. The sections in the comb-honey super should contain foundation, preferably full sheets filling

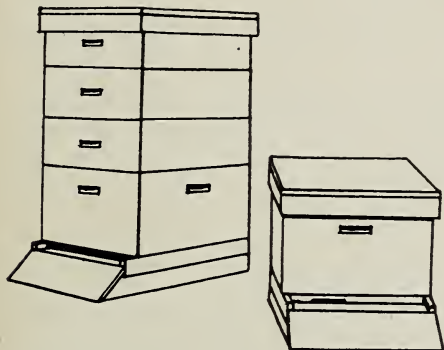


Fig. 2.—Old hive turned back toward new one after swarm has entered.

the sections almost completely. If possible, the first super should contain at least one section in which the comb is already built, saved over from the previous year. This "bait" comb should induce the bees to begin work in the first super promptly. As soon as the bees commence working on the outside sections of this first super, a second super should be given. If the bees are working well and new honey is being stored thruout the first super, the second super should be placed below the first one; but, if the bees are not working in all sections of the first super, the second super should be placed on top of the first one.

How to Hive a Swarm.

If a swarm issues look for the queen (if she has been clipped) on the ground in front of the hive while the swarm is coming out. When the queen is found put her into a Miller queen-catcher and introducing cage or any kind of wire-cloth cage in which she can be confined. Lay the cage down near the hive in the shade; then move the hive from its stand, turning the entrance to one side, as in Fig. 1. Place a new hive where the old one stood, having frames filled with full sheets of foundation, and, if available, one empty comb. Transfer the supers from the old hive to the new, put back the covers on both hives, and thrust the cage containing the queen into the entrance of the new hive.

The bees may return and enter the new hive without clustering, or they may cluster

and return later. As they are returning none of them should be permitted to enter the old hive. To prevent this, it may be necessary to cover the old hive with a cloth or move it farther away. When most of the bees have entered the hive the queen should be released among them.

If a queen trap is used to catch the queen as the swarm issues, instead of clipping the queen, the procedure is the same except that it is not necessary to look for the queen; but after the swarm is out, the old hive set to one side and the new one is in its place, the queen trap may simply be put on the new hive and the slide pulled out to permit the queen to enter the hive when the swarm returns.

After the swarm has entered the hive and the excitement has subsided, the entrance of the parent hive should be turned toward that of the swarm, as in Fig. 2.

A day or two later the parent hive should be turned with its entrance close to that of the swarm (Fig. 3), and on the seventh day, choosing a time when the bees are working well in the fields and preferably early in the afternoon when many young bees are taking their play flight in front of the parent hive, it should be moved to a new location at least 20 feet away for increase. In moving the parent hive away it should be handled carefully to prevent disturbing the bees, so that the field bees going out will not note the change in the location of the hive. When this is done most of the young bees, which have become field work-



Fig. 3.—Old hive set close to new, ready to be moved away on seventh day.

ers during the week, as they return from the fields will now enter the new hive on the old stand where they should be most useful, so depleting the parent colony of its bees that after-swarming is usually prevented; and since most of the workers are held together in the new hive on the old stand the yield of honey should not be reduced on account of the swarm having issued. Usually the parent colony does not produce any surplus honey the same season, but it should be in excellent condition for winter.

Y EARS ago, when the Anti-Saloon League was first started, we had a big convention (I think it was at Columbus), and Lucy Page Gaston was there and wanted a place on the program to talk on cigarettes. But the managers decided—and perhaps wisely—on “one thing at a time,” especially when that one thing was such a *stupendous* task. From that time to this, I have felt a good deal that way about dealing with the tobacco matter on these pages. The editor of the *No-Tobacco Journal* (Butler, Ind.) recently said, “We have no hope, at least just at present, of outlawing tobacco from grown-up manhood; but we do hope to get laws, and enforce laws we already have, to keep tobacco, and especially cigarettes, from our immature boys and girls.”

I take it you all know about the millions of starving Chinese, and what the good people of America and the rest of the world are doing to save them. From an article in *Good Health* (Battle Creek, Mich.) I clip from the opening, and also a sentence from the closing paragraph:

CONCERNING TOBACCO.

WILL H. BROWN.

Tobacco and Suffering China.

The attitude of American tobacco dealers toward starving, suffering China should bring about the utter annihilation of the tobacco business, were there not another reason in the world for its destruction. The situation is almost unbelievable. American tobacco men have deliberately adopted the slogan, “A cigarette in the mouth of every man, woman, and child in China.” Rev. R. R. Blews, writing for the *Free Methodist*, Chicago, says this slogan is posted all over China.

The ghoulish selfishness of the act is seen in the fact that 40,000,000 Chinese are facing starvation, according to Bishop Lewis, who has been traveling over the famine-stricken districts of the country. While the generous-hearted citizens of America are raising money to aid this sorely afflicted people. American tobacco interests are planning to get from them, for tobacco, money so much needed for the bare necessities of existence.

The seriousness of the situation has prompted the Chinese Minister of the Interior to send forth an edict, in which he says that unless restrictions are imposed, tobacco will become a worse curse than opium in former days. That China intends later to totally prohibit the weed is indicated in the following words:

“It is hereby decided that before taking up any measure for the *total prohibition* of its use, the following restrictions shall be placed upon the use of tobacco.”

The restrictions mentioned prohibit cigars and cigarettes for any one under 18; for all military or naval men; for students in any Government school or college.



For they sleep not, except they have done mischief; and their sleep is taken away, unless they cause some to fall.—Prov. 4:16.

We have made a covenant with death, and with hell are we at agreement.—Isa. 28:15.

Come unto me, all ye that labor and are heavy laden, and I will give you rest.—Matt. 11:28.

Every real lover of humanity will heartily wish China success in throwing off the tobacco evil as she did the opium traffic.
* * * * *

When a great nation spends three times as much to tear down its boyhood and girlhood, its manhood and womanhood, as it does to develop the mind, the body, and the soul of its citizens, it is time to call a halt.

Well, my good friends, there is another phase of the matter that seems to indicate that “even grown-up manhood” needs protection. In the *No-Tobacco Journal*, April number, is an article, a part of which I give below:

SAYS TOBACCO “CURE” IS FAKE.

The Tobacco Leaf, issue of March 10, 1921, had the following:

“The Federal Government is on the trail of the fake tobacco cure exploiters and already has one of these nostrums up a tree. After an investigation which has been in progress since early last summer, W. H. Lamar, solicitor of the Post Office Department, has recommended to the Postmaster General the issuance of a fraud order against Edward J. Woods, Inc., promoters of the ‘Woods Set of Medicines.’ This Woods outfit has been one of the most conspicuous offenders in the practice of advertising its remedies by means of blood curdling descriptions of the terrible effects of tobacco upon the tobacco devotee.*

“Solicitor Lamar’s recommendation comprises 17 typewritten pages in which the fraudulent nature of the ‘tobacco cure’ business and ‘tobacco cure’ advertising is laid bare. His report concludes as follows:

“The evidence shows that none of these so-called ‘treatments’ contain any drug or combination of drugs which will create an ‘abhorrence’ or ‘associated distaste’ for tobacco, and that the principal feature of the ‘C’ and ‘CCC Treatment’ is the direction to stop the use of tobacco. In effect, the patient pays his five dollars to be told to quit tobacco.

“The postmaster at New York reports that this concern receives on an average of 200 letters a day.”

We do not know whether the Woods set of medicines are a fraud or not, but it is very certain that the tobacco trade will do everything possible to put the tobacco habit cure people out of business.

Even tho this particular tobacco habit cure should prove a fake, it does not follow that all are fakes or that the tobacco habit is not a real disease for which a cure is needed. The tobacco trade deliberately carries the impression that all “tobacco cure exploiters” are fakes.

It is certainly true that a very large majority of tobacco users find that they are unable to quit of their own strength. It will be noted in the above quotation that the Woods Corporation “receives an average of 200 letters a day.” This is unmistakable evidence that a large number of tobacco users realize the fact that they are in the clutches of a silly, filthy, injurious habit and that they desire aid in their efforts to get rid of it.

*Their testimonials from patients were no doubt damaging to the tobacco trade.

The government is right in its efforts to suppress any fake remedy that may be put on the market, but it will make a serious mistake if it proceeds against all tobacco remedies on the ground that they are all fakes. The government would do itself honor by instituting research for an effectual remedy for the tobacco habit. They spend millions to find and administer remedies for diseases of hogs, cattle, sheep, dogs, etc. Why not look for a remedy for the tobacco habit which is a disease from which hundreds of men are seeking relief every day?

Later. The Tobacco Leaf in its March 17 issue, announces that a fraud order has been issued against the Edward J. Woods, Inc., that prohibits the postmaster of New York from delivering mail and paying money orders to that concern.

It seems from above that Solicitor Lamar may have helped the tobacco people as the notorious Palmer has helped the brewers or at least *tried* to help them. Lest it be taken for granted that I favor drugs or medicines to help escape the clutches of Satan, let me point with emphasis to "the Lamb of God that taketh away the sin of the world," and to my closing text. I have been thru the battle and know whereof I speak.

"From siaking sand, He lifted me,
With gentle hand He lifted me;
From darkest night to plains of light,
Oh, praise His name! He lifted me."

HOW TO TAKE A BATH.

Some months ago I saw a newspaper clipping in regard to a divorce recently granted. The good wife complained that her husband had not taken a bath for a whole year, and she could not induce him to "wash up." Well, I have heard of more than one *man* who had not taken a bath for a whole year, but I have never yet heard of a *woman's* being guilty of any such serious charge. May God bless the women! Whatever they do, they are pretty sure to keep clean and pure and sweet. Well, when I was at Battle Creek I told the good, clean doctor that I not only have some sort of bath all over every day of my life, but that I find it quite necessary for me to engage in some outdoor occupation that will bring at least a little sweat or perspiration every day of my life. And sometimes I do not feel real bright and well unless I get this little sweat bath forenoon and afternoon. The good doctor said that this was exactly the thing to do, and that I was wise in getting away from the cold North in order that I might have this necessary perspiration *out in the open air*, every day in the year.

By the way, in a recent very kind letter editor Collingwood of the Rural New Yorker, paid me the following high compliment:

It is, really a great surprise to me to have you say that you are 81. I am sure that no one would ever dream of such a thing from your letters and from your writings; and, after all, that is about the best test I know for vitality.

Well, now, I have made a discovery right along the same line; and, like a great part of my discoveries, they are not so very new after all. My discovery is this: In

order to have the most perfect bath, you want to get outdoors, say in the harvest field, or something like it, on a very warm day, roll up your sleeves, and go to work until the sweat not only drips from the end of your nose, but so that the perspiration will pour forth from every pore in the body. While you are thus dripping wet, take a shower bath or get into a bath-tub. Of course you will want warm water or you may get a chill. The boys on the farm who go in swimming know what I have been trying to describe. Sometimes while helping during thrashing time, when they are covered with dirt and sweat, a plunge in some swimming pool near by brings about this exuberant feeling of health I have been trying to describe.

Now, the Battle Creek folks have got "one better" on the above, and they can give you just such a bath any day in the winter; but, of course, you would not get it out in the open air. Before taking the bath the patient is put in a little round tent, in a warm room of course, with a great lot of electric globes all around him. This little cloth tent is made tight all around, and very soon the sweat begins to pour not only from the end of your nose, but from all over the body. And now comes the good attendant. I suppose he must be *one* of the "fifty doctors," and he gives you a good-sized cup of cold water. He keeps urging you to drink all of it. This big drink of water causes still more sweat, and then he gives you another cup and urges you to drink that—all of it. I think I drank a full pint, and I never had such a sweat before. It seemed as if the water would pour down my throat (and it was just fun to take it, too), and in a twinkling of time it oozed out of every pore of my body. I was not only getting an external bath, but an internal one, and then I was taken out of the tent and conducted to a tub and scrubbed with soap and water until I was all in a lather from head to foot. And then I began to wonder how he was going to get all the soap clear out of the way. Well, the next part of the program was a shower bath where little jets of warm or hot water struck every portion of my body with sufficient force to do a most perfect job of washing. After being scrubbed off with dry towels I was pronounced clean, and I confess I did find myself most deliciously clean. It was right after that, or soon after, that I rode 200 miles in an automobile in one day; and, altho we passed over some of the worst roads a small part of the way that I ever rode over in my life in an auto, I felt "as spry as a cricket" when I reached home a little after dark.

Now, in summing up, what I have tried to make plain is this: The very best time in the world to get a perfect bath is when the pores of your body are all wide open and are exuding sweat. If you let that sweat dry on and then try to moisten it up again, say just before you go to bed, you can not get

any such good results as by taking a bath when the sweat-pores are all wide open and discharging "wickedness." And I am not sure but there is much better chance of making a man a *Christian*, by frequent bathing such as I have described. While I do not believe in divorcees, I might almost say under any circumstances, I do think the poor woman mentioned at the head of this article had *almost* as good a reason as any.

STILL ANOTHER NEW SWEET CLOVER.

The letter below, with appended newspaper clipping, is a surprise to me; and if it happens that it proves to be a paying investment just for the seed and *nothing else*, I think it is going to be one of the "happy surprises" to all beekeepers. Where the clover field is allowed to produce seed, of course we should get honey—all there is of it. As the names of parties and full particulars are supplied, there is no question about the exact truth of the statement. And we owe our thanks to our good friend Ness for giving to the beekeeping world what has already been done in the way of growing sweet clover for seed.

I herewith inclose a clipping from our local paper about a new kind of sweet clover.

Clifford Collins Farm is about 3 or 4 miles from my place, and I know all about the sweet clover which they grow.

I have a yard of bees right is Collins' orchard which does some good to the seed crop.

Certainly this white sweet clover is the kind for the farmer to grow. Another neighbor farmer got 3500 pounds of seed of this kind of sweet clover from less than 4 acres.

Those farmers are selling this seed for 30c and 32c per pound, and there is a big demand for it.

Morris, Ill., Sept. 14, 1920. L. L. NESS.

THIRTEEN BUSHELS TO A THE ACRE IS HIGH RECORD. F. E. LONGMIRE,

Farm Adviser for Grundy County.

Thirteen bushels of sweet clover seed per acre on 52 acres is the record on a large acreage so far reported. The yield is reported the same on two different fields of 31 and 21 acres farmed by Asa Van Zandt and Peter Breit, respectively, on the Clifford Collins farms. This is not the common, large, coarse sweet clover, but a new strain that has been recently branded the Grundy County Sweet Clover. The origin of this clover is not known. It was bought for seedling by two individual farmers in this county five years ago and was not known to be different kind until it produced seed.

It has several distinct characteristics, that are noticeable. It is smaller than the large kind, the average height being around four feet; it is more uniform in size and in ripening seed; it is a heavy seed producer and ripens seed three weeks ahead of the large sweet clover. July 15 was the date for harvesting seed this year. This early ripening habit makes it possible to harvest and hull it before threshing the small grain.

LEAVES ARE SMALLER.

Another difference is that the leaves are smaller and narrower and a slightly different green from the large sweet clover. Being smaller and finer stemmed it makes better hay than the large kind, altho it is not as distinctly a hay crop as alfalfa. It has practically the same habits of growth and soil requirements as the large kind and is a good soil builder.

It is not so good a pasture crop as large sweet clover as it matures earlier, but for a seed-producing crop used in regular rotation it has decidedly superior qualities. It does not require clipping, which eliminates the hazard of killing at that time, and its height and uniform ripening make it an easy crop to harvest for seed. A great many farmers have become interested in this new type of sweet clover and are planning to seed some of it next year.

YIELD IS UNUSUAL.

Thirteen-bushels yields are unusual; however, five and six bushels per acre are quite common. William Hadden of Mazon harvested five bushels of excellent seed per acre on 60 acres. Maurice Walsh of Mazon harvested 6½ bushels on 40 acres. Robert McLuckie of Coal City and Alex Bell of Morris have splendid fields that are expected to yield heavily.

Several different kinds of sweet clover that a few years ago were classified as noxious weeds and were the subject of much hard work in attempting to destroy them, are now used as a regular crop and are improving the soil and making money for those growing them.

TWO CROPS IN ONE SEASON IN TEXAS.

In regard to the new annual sweet clover, we now have the second crop matured on the same ground, but the weather was so hot the second crop did not do as well as the first.

About Jan. 1st we transplanted some small volunteer plants, which by March 15th were beginning to bloom. Six weeks later these plants had reached a height of nearly six feet, and, as much of the seed had matured, we cut the ripest plants and re-seeded the ground, using the new-crop seed.

On account of extremely hot weather we did not secure a good stand, neither did the plants grow so thrifty as the first crop. They commenced blooming when about 12 inches high and finally reached a height of three feet, but the plants were spindling, and many of the seed have not matured well.

Bees worked the second crop fairly well, but nothing like they did the first.

From our experience, this season, I will say that results do not justify the effort required to grow the second crop.

BLOOMS AND MATURES IN BERMUDA GRASS TURF.

This is the hardest clover I ever saw. Volunteer plants thrive in a *Bermuda grass turf*, and bloom and mature seed. No inoculation of soil is required here.

J. D. YANCEY.

Bay City, Texas., Sept. 20, 1920.

BERMUDA NEW POTATOES.

On page 235, April Gleanings, I mentioned Bermuda potatoes, and took it for granted that the Bermuda barrels held about 11 pecks (165 pounds) like our American barrels; but, in Cleveland Plain Dealer for March 15, I find "New Bermudas, \$14.00 a barrel of 100 pounds." The above price for not quite *seven* pecks would be over \$8.00 a bushel. We can grow just as good ones here, and you can do it *right off now* if you get at it as soon as you see this.

"GROW A VEGETABLE GARDEN."

The above is the title of a very attractive little pamphlet of 44 pages, most beautifully illustrated on nearly every page. It is furnished by the International Harvester Co., Chicago, Ill. It will be sent postpaid for the small sum of 5 cents.

This same company furnishes also a most valuable pamphlet of 66 pages on sweet clover. The price of the latter, however, is 10 cents instead of 5. As this book was published in 1916 it does not touch on the *annual* sweet clover; but the facts it gives, especially in regard to nitrogen-gathering bacteria, with illustrations, are exceedingly valuable.

Classified Advertisements

Notices will be inserted in these classified columns for 30c per line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified column or we will not be responsible for errors. Copy should be received by 15th of preceding month to insure insertion.

REGULAR ADVERTISEMENTS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued when they are in good standing.)

J. F. Moore, C. J. Baldridge, Howard H. Choate, S. J. Harris, H. C. Lee, F. J. Rettig, W. A. Hunter, J. Tom White, Jas. H. Kitchen, G. E. Williams, McAdams Seed Co., O. J. Arfsten, Jones & Stevenson, S. K. Blundin, Chas. W. Zweily, J. W. K. Shaw & Co., J. W. Romberger, Brazos Valley Apiaries, J. M. Berrier, Riverside Apiaries, L. J. Farmer, R. H. Shumway, C. C. Clemons Produce Co., W. F. & John Barnes Co., C. N. Flansburgh, N. O. Fuller, Electric Wheel Co., Eggers Bee Supply Mfg. Co., DeGraff Food Co., W. B. Wallin.

HONEY AND WAX FOR SALE.

FOR SALE—Honey in 5 and 60 pound cans.
Van Wyngarden Bros., Hebron, Ind.

FOR SALE—Fancy clover honey in 60-lb. cans.
Jos. Hanke, Port Washington, Wis.

FOR SALE—Choice clover-basswood blend honey in new 60-lb. cans. J. N. Harris, St. Louis, Mich.

FOR SALE—Choice clover extracted honey. State quantity wanted. J. D. Beals, Oto, Iowa.

FOR SALE—Clover and buckwheat honey in 60-lb. cans. Bert Smith, Romulus, N. Y.

FOR SALE—White clover comb honey.
W. L. Ritter, Genoa, Ills.

FOR SALE—Fine quality raspberry-milkweed honey in 5-lb. and 10-lb. pails and 60-lb. cans.
P. W. Sowinski, Bellaire, Mich.

FOR SALE—Best quality clover-basswood extracted honey. Two 60-lb. cans in case.
Gelsner Bros., Dalton, N. Y.

FOR SALE—2000 lbs. choice white clover extracted honey. State quantity wanted. Sample 20c, applied on first order. C. H. Hodgkin, Rochester, O.

FOR SALE—500 lbs. clover-basswood honey, 5-lb. pails, delivered, \$1.00 pail. Special price on lot. One ton fall honey in 60-lb. cans. Quote best offer.
H. S. Ostrander, Mellenville, N. Y.

FOR SALE—Extracted clover honey, 15c per pound; amber and buckwheat, 12½c per pound; two 60-lb. cans to case, Amber in 50-gal. barrels, 10c per pound. H. G. Quirin, Bellevue, Ohio.

FOR SALE—Extra choice extracted white clover honey, put up in new 60-lb. cans and 5-lb. pails. Sample, 20c, same to apply on first order.
David Running, Filion, Mich.

FOR SALE—Clover, basswood or buckwheat honey, comb and extracted, by the case, ton, or carload. Let me supply your wants with this fine N. Y. State honey. C. B. Howard, Geneva, N. Y.

FOR SALE—A No. 1 white-clover extracted honey in 60-lb. cans, 2 cans per case. State how much you can use and I will quote on same.
L. S. Griggs, 711 Avon St., Flint, Mich.

FOR SALE—White clover honey, almost water white. Put up in new 60-lb. tin cans, two to the case. Write for prices.

D. R. Townsend, Northstar, Mich.

FOR SALE—White honey in 60-lb. cans, sample and price on request. Also white clover comb, 24 sections to case. The A. I. Root Co., Inc., 23 Leonard St., New York City.

FOR SALE—Finest white clover extracted honey in 60-lb. cans. Price f. o. b. Holgate, Ohio. One can, \$10.80, two cans, \$20.00. 10 lbs. delivered to third postal zone, \$2.50; 5 lbs., \$1.25.
Noah Bordner, Holgate, Ohio.

FOR SALE—White honey, 15c a lb.; L. A. alfalfa, 14c, in two 60-lb. cans; Chilian in 165-lb. kegs, 10c; light amber honey in 50-gal. blbls., 80c a gal. Beeswax, 30c a lb.
Walter C. Morris, 105 Hudson St., New York City.

FOR SALE—Finest quality clover extracted honey in new 60-lb. tins at greatly reduced price to close out balance of 1920 crop. Say how much you can use and we will be pleased to quote you our lowest price. Address E. D. Townsend & Sons, Northstar, Mich.

HONEY FOR SALE—Immediate shipment f. o. b. N. Y. Calif. white orange, 60-lb. tins, 19c lb.; Calif. white sage, 60-lb. tins, 16c lb.; white sweet clover, 60-lb. tins, 14c lb.; Calif. L. A. sage, 60-lb. tins, 13c lb.; West Indian L. A., 60-lb. tins, 10c lb.; West Indian L. A., 10-lb. tins, 6 per case, 15c per lb. Hoffman & Hauck, Inc., Woodhaven, N. Y.

HONEY AND WAX WANTED.

BEEWAX WANTED—For manufacture into SUPERIOR FOUNDATION. (Weed Process.)
Superior Honey Co., Ogden, Utah.

BEEWAX wanted. Old combs (dry) and cappings for rendering. Also wax accepted in trade. Top market prices offered.

A. I. Root Co. of Iowa, Council Bluffs, Iowa.

WANTED—Shipments of old combs and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, O.

OLD COMBS WANTED—Our steam wax-presses will get every ounce of beeswax out of old combs, cappings, or slungum. Send for our terms and our new 1921 catalog. We will buy your share of the wax for cash or will work it into foundation for you.
Dadant & Sons, Hamilton, Illinois.

WANTED—Beeswax. We are paying 1 and 2c extra for choice yellow beeswax, and in exchange for supplies we can offer a still better price. Be sure your shipment bears your name and address, so we can identify it immediately upon arrival, and make prompt remittance.

The A. I. Root Co., Medina, Ohio.

FOR SALE.

HONEY LABELS—New designs. Catalog free.
Eastern Label Co., Clintonville, Conn.

FOR SALE—A full line of Root's goods at Root's prices.
A. L. Healy, Mayaguez, Porto Rico.

ROOT'S goods at Root prices. A. W. Yates, 3 Chapman St., Hartford, Conn.

EIGHT twin-mating hives with frames, good as new, \$12.00. Peterson, 14 Steele St., Worcester, Mass.

FOR SALE—SUPERIOR FOUNDATION, "Best by Test." Let us prove it. Order now.
Superior Honey Co., Ogden, Utah.

ROOT'S BEE SUPPLIES—For the Central Southwest Beekeepers. Beeswax wanted. Free catalog. Stiles Bee Supply Co., Stillwater, Okla.

FOR SALE—We have 85 modified Dadant hives of bees, 1 frame. Will sell part of them.
C. A. Bunch, Lakeville, Ind.

PUSH-IN-THE-COMB CAGES—Quickest and safest way to introduce queens, 50c postpaid.
F. R. Davis, 203 Oak St., Weehawken, N. J.

BEEKEEPERS' SUPPLIES—Root's goods at factory prices. Send for 1921 catalog.
F. D. Manchester, Middlebury, Vt.

FOR SALE—100-gal. size galvanized honey tank, good as new. Best offer takes it.
Martin Fink, Cold Spring, Minn.

PORTER BEE-ESCAPES save honey, time, and money. Great labor-savers. For sale by all dealers in bee supplies.
R. & E. C. Porter, Lewiston, Ill.

FOR SALE—A few supplies, one Cowan extractor, No. 15, in good condition, \$25. One observation hive-body, \$10.00.
Foster Crumley, Athens, Ohio.

FOR SALE or on shares, 14 apiaries, one or all. Healthful location with American school and church in town, on stone road. Last crop over 40 tons.
M. C. Engle, Herradura, Cuba.

FOR SALE—Good second-hand double-deck comb-honey shipping cases for $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{8}$ sections, 25c per case, f. o. b., Cincinnati. C. H. W. Weber & Co., 2146 Central Ave., Cincinnati, Ohio.

FOR SALE—Good second-hand empty 60-lb. honey cans, two cans to the case, at 60c per case f. o. b. Cincinnati. Terms, cash with order. C. H. W. Weber & Co., 2146 Central Ave., Cincinnati, Ohio.

FOR SALE—36 standard 10-frame deep hive-bodies with self-spacing frames. Eight Excelsior covers, ten reversible bottoms, all new. \$80.00 for the lot, f. o. b. Robinson. Henry McIntosh, Robinson, Ills.

FOR SALE—One hundred new standard, two-story, ten-frame hives, metal-covered, nailed, painted, with Hoffman frames, wired, with full sheets foundation. In lots of five or more. \$5.00 each, f. o. b. Mobile. H. A. Goering, Crichton, Ala.

FOUNDATION-MAKING OUTFIT CHEAP—Complete hand outfit, fit to produce on commercial scale, excellent condition, 3 mills, 3 tanks, gasoline stove, boards, etc. Write for particulars: \$125.00 takes; worth \$250. H. F. Mellon, Acton, Cal.

FOR SALE—700 A grade $4 \times 5 \times 1\frac{1}{2}$ plain sections, \$11.00; 300 P fences for $4\frac{1}{4} \times 4\frac{1}{4}$ plain sections, a few of which are slightly discolored by exposure to air, \$16.00.

Miss E. J. King, McArthur, Ohio.

FOR SALE—500 lbs. Dadant's light brood foundation for Hoffman frames, put up in boxes 50 lbs. net. Just as received from manufacturer. No orders accepted for less than one box at 75c per lb.
H. B. Gable, Romulus, N. Y.

FOR SALE—Equipment for large apiary, hundreds of hives, supers, excluders, extracting combs, four-frame reversible extractor, honey tanks, wax-press, steam uncapping knife, hundreds of frames were never nailed up. Lots of foundation. Have more than I need. Dave Goerner, Hematite, Mo.

FOR SALE—Owner wants use of outside warehouse. We must vacate and offer for quick sale: One-story 8-frame single-wall hives, per package of 5, \$15.00; 10-frame size, \$17.50. Staple-spaced frames, per package of 100, \$9.00. 4×5 shipping cases with glass, per package of 25, \$15.00. Goods first-class. Offer good only as long as this stock lasts.
A. G. Woodman Co., Grand Rapids, Mich.

FOR SALE—Novice two-frame extractor, used for less than 1,000 pounds. Reason for selling, have larger machine. A. W. Lindsay, 438 Mt. Vernon Ave., Detroit, Mich.

FOR SALE—175 white pine, single-story standard ten-frame hives. Never been used. They are dovetailed with reversible bottoms and metal-spaced frames. These are knocked down at \$2.95 f. o. b. here. Paul D. Roban, Waverly, Minn.

FOR SALE—250 colonies of bees in best honey-producing section of Colorado. One apiary in 8-frame hives fully equipped for comb honey. Balance in 10-frame hives, equipped for extracted honey with complete extracting outfit. For particulars write to E. J. Cheek, Merino, Colo.

FOR SALE—New Langstroth hives in lots of 5. Five complete hive-bodies in flat with bottom-board and telescope cover. Ten plain-frame without foundation, \$16.50. Five complete supers $4\frac{1}{4} \times 4\frac{1}{4}$ plain section, without sections or foundation, \$7.50.
C. J. Waffle, Evart, Mich.

FOR SALE—Danzenbaker supers for $4 \times 5 \times 1\frac{1}{8}$ sections complete with section holders and fences. For use on ten-frame hives. 15 nailed and painted and never used. 33 used two seasons but in good shape. No disease about. Will sell all crated for shipment at \$1.50 each.

Miss E. J. King, McArthur, O.

AUTOMOBILE REPAIRS

AUTOMOBILE owners should subscribe for the **AUTOMOBILE DEALER AND REPAIRER**; 150-page illustrated monthly devoted exclusively to the care and repair of the car. The only magazine in the world devoted to the practical side of motoring. The "Trouble Department" contains five pages of numbered questions each month from car owners and repairmen which are answered by experts on gasoline engine repairs. \$1.50 per year. 15 cents per copy. Postals not answered. Charles D. Sherman, 107 Highland Court, Hartford, Conn.

WANTS AND EXCHANGES.

WANTED—Hand and power extractor, also engine.
N. Krautwurst, Annandale, N. J.

WANTED—Old combs and cappings for rendering on shares. Our steam equipment secures all the wax. Superior Honey Co., Ogden, Utah.

WANTED—To quote special prices on queen cages in quantity lots, to breeders. State quantity wanted. A. G. Woodman Co., Grand Rapids, Mich.

FOR SALE OR EXCHANGE—One foundation machine for cash or good 5×7 View camera.
Thos. H. Evans, Batesville, Ark.

EXCHANGE—New annual white sweet clover seed, for bees and queens, or bee books.
E. Thornton, Addison, N. Y.

WANTED—The May to December, 1920, numbers, inclusive, of Gleanings. Must be in good condition.
A. T. Copeland, Burley, Wash.

QUEENS WANTED—Lowest price on 50 to 200 queens. Also colonies of bees, black, hybrids, or Italians.
Charles Schilke, Matawan, N. J.

WANTED—200 or more colonies of bees within 100 miles of Flint to work on shares for extracted honey, for season 1921. Address Leonard S. Griggs, 711 Avon St., Flint, Mich.

BEEES WANTED ON SHARES—100 to 200 colonies in southeastern Michigan for season of 1921. Years of experience, County Apiary Inspector. Now own 180 colonies.
Earl F. Townsend, 417 Gillespie Ave., Flint, Mich.

REAL ESTATE

FOR SALE—Farm and 50 colonies of bees with equipment for 100 or more. Good location.
A. L. Weidler, McBain, Mich.

FOR SALE—Sausalito, Calif., half hour from San Francisco, two flat buildings, frame construction, four rooms each. Living rooms beam ceilings, brick fireplaces, wood wainscot. Thoroughly modern, good condition. Charming situated on a gore lot, overlooking S. F. Bay; \$3500 cash or terms to right parties. L. H. Betts, 766 Pine St., San Francisco, or Wm. B. Betts, 1615 Ashland Block, Chicago, Ills.

MISCELLANEOUS

FOR SALE—One pair white ferrets, price \$10. paid \$25. Eddie Johnson, Lansing, R. D. No. 2. Ia.

FOR SALE—Carneaux pigeons, 50 pairs red and yellow, fine birds, \$2.00 a pair.
W. E. Genthner, Saugerties, N. Y.

FOR SALE—6 x 10 Excelsior printing press, types, rules, new, for cash.
Edwin Dahlquist, North Branch, Minn.

FOR SALE—Avery 5 x 10 farm tractor, with pulley attachment. W. V. Binkerd, West Monterey, Pa.

CHOCOLATES—Pure honey centers, delicious confection and a beautiful package, \$1.00 per pound, postpaid. "Endion," Naples, N. Y.

HONEY, ROOTS, FURS—Beemen, why not increase your profits? A 32-page booklet describing books on Bee Hunting, Medicinal Root Growing, Fur Farming, Tanning, Trapping, etc., free.
A. R. Harding, Publisher, Columbus, Ohio.

MANUAL training teacher, 21, strong, good knowledge of mechanics, interested in bee culture, wishes position after June 17, where he can learn the business. Minnesota vicinity preferred. Please give full particulars as to wages, location, and possibilities. G. G. Swenson, Garfield School, Minneapolis, Minn.

SWEET clover combined huller and scarifier for hand use, one extra set of lining and two screens included, each \$3.75, postage extra. Brass dropping tubes with tin funnel drops all kinds of small seeds on exact spot in windy weather without bending your back. Each, \$1.00 postpaid.
S. Rouse, Ludlow, R. D. No. 2, Ky.

BEEES AND QUEENS.

FINEST Italian queens. Send for booklet and price list. Jay Smith, R. D. No. 3, Vincennes, Ind.

WHEN it's GOLDEN, it's PHELPS. C. W. Phelps & Son, Binghamton, N. Y.

FOR SALE—Italian queens and nuclei.
B. F. Kindig, E. Lansing, Mich.

HARDY Italian queens, \$1.00 each.
W. G. Lauver, Middletown, Pa.

GOLDEN Italian queens, untested, \$1.50 each; dozen, \$14.00. E. A. Simmons, Greenville, Ala.

FOR SALE—1921 Golden Italian queens, price list free. Write E. E. Lawrence, Doniphan, Mo.

THAGARD ITALIAN QUEENS—See display advertisement elsewhere.

PACKAGE BEES and PURE ITALIAN QUEENS. Booking orders now for spring delivery. Circular free.

J. E. Wing, 155 Schiele Ave., San Jose, Calif.

PHELPS' GOLDEN QUEENS will please you. Mated, \$2.00. C. W. Phelps & Son, Binghamton, N. Y.

MY famous Italian queens, June 1 and later, \$1.50 each, six for \$8.00. J. W. Romberger, Apiarian, 3113 Locust St., St. Joseph, Mo.

FOR SALE—Eight 8-frame hives, complete. Italian bees. M. F. Ryan, Moorestown, R. D. No. 2, Box 88, N. J.

BOOKED to capacity on package bees. Thanks. Orders for few choice queens considered later.
Jes Dalton, Bordelonville, La.

IF you want queens that will produce results, give THAGARD'S ITALIAN QUEENS a trial.
V. R. Thagard, Greenville, Ala.

FOR SALE—3-frame nuclei with tested Italian queens, \$6.00 f. o. b. Agricultural College, Miss.
Dr. Chas. F. Briscoe, Agricultural College, Miss.

FOR SALE—Bright Italian queens, \$1.50 each; \$14.00 per doz. Ready after April 15.
T. J. Talley, Greenville, R. D. No. 3, Ala.

FOR SALE—Golden or three-banded virgins, 60c each, or \$6.00 per dozen. Safe arrival.
R. O. Cox, Luverne, Ala., R. D. No. 4.

BEEES AND QUEENS from my Carolina apiaries —progeny of my famous Porto Rican pedigreed-breeding stock Elton Warner, Asheville, N. C.

FOR SALE—Hardy Northern-bred Italian queens and bees. Each and every queen warranted satisfactory. For prices and further information, write.
H. G. Quirin, Bellevue, Ohio.

FOR SALE—Leather-colored Italian queens, tested, until June 1, \$2.50; after, \$2.00; untested, \$1.25; 12, \$13.00. Root's goods at Root's prices.
A. W. Yates, 15 Chapman St., Hartford, Conn.

BUSINESS-FIRST queens, untested, \$1.50 each; select untested, \$1.75; tested, \$2.25; select tested, \$2.50. Safe delivery guaranteed, orders filled promptly.
M. F. Perry, Bradentown, Fla.

FOR SALE—A. I. Root Co. strain of leather-colored Italians. Virgins only, May to October 1. 75c; 10, \$7.00; 100, \$65.00.
P. W. Stowell, Otsego, Mich.

BEEES BY THE POUND — Also QUEENS. Booking orders now. FREE circulars give details. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas. E. B. Ault, Prop.

NUCLEI—Strong 4-frame nuclei in May and June, hybrids, \$6.00; Italian, \$7.00. Can supply 100 nuclei from that number of colonies.
B. F. Averill, Howardsville, Va.

FOR SALE—Golden or three-banded queens, untested only. Order now for shipment June 1 or later. One, \$1.50; six, \$8.00; 12, \$15.00.
Ross B. Scott, LaGrange, Ind.

COLORADO QUEENS—Pure Italians. Our sunny climate and altitude produce the best there are. Write now for price list. C. I. Goodrich, breeder of fine queens, Wheatridge, Colo.

FOR SALE—Three-banded Italian queens, untested, \$1.50 each; 6, \$7.50; 12, \$14.00. Select untested, \$1.75 each. Satisfaction guaranteed. W. T. Perdue & Sons, R. D. No. 1, Fort Deposit, Ala.

FOR SALE—Golden queens, untested, \$1.15; 6 or more, \$1.10 each; select untested, \$1.60; 6 or more, \$1.50 each. Safe arrival. Hazel V. Bonkemeyer, Randleman, R. D. No. 2, N. C.

ORDER booked now for delivery June 1, 3-frame nuclei and queen, \$7.50; select tested, \$8.50. Dr. Miller's strain. No pound packages. Low express rates and quick transit to north.

S. G. Crocker, Jr., Roland Park, Baltimore, Md.

THAGARD'S ITALIAN QUEENS produce workers that fill the supers quick.

V. R. Thagard, Greenville, Ala.

FOR SALE—2-lb. packages Italian bees and queens by parcel post, postage paid, delivery April 15, for \$8.50; 2-frame nuclei with Italian queen by express, not prepaid, delivery May 3, \$9.00.
Otto J. Spahn, Pleasantville, N. Y.

FOR SALE—200 Italian nuclei, 2-frame, \$5.00; 3-frame, \$7.00; untested queens, \$1.50; tested, \$2.00. Prompt delivery. Supplies at cost.
R. Kramcke, 1104 Victor St., St. Louis, Mo.

JUST to let all my customers know I am still breeding three-banded Dr. Miller stock queens. One untested queen, \$2.00; 6 for \$11.00. Selects 25c each higher.
Curd Walker, Jellico, Tenn.

IF good three-banded Italian queens are wanted, send your order to M. Bates & Sons, Greenville, R. D. No. 4, Ala. One dozen queens, \$14.00; 100, \$100. Pure mating, safe arrival, and satisfaction guaranteed.

FOR SALE—Bees for May and June shipment. Two pounds bees and an untested Italian queen shipped by express on drawn comb with stores. Certificate of health with each shipment.
Ross B. Scott, LaGrange, Ind.

WE believe we have the best Italian queens obtainable. Our new system is working wonders. Book your order now for 1921. Untested, \$1.50; tested, \$3.00; virgins, imported mothers, 50c.
F. M. Russell, Roxbury, Ohio.

WE are now booking orders for early spring delivery of two and three frame nuclei, with untested or tested queens. Write for prices and terms. We also manufacture cypress hives and frames.
Sarasota Bee Co., Sarasota, Fla.

ITALIAN QUEENS OF WINDMERE are superior three-banded stock. Untested, \$1.50 each; 6 for \$8.00; tested, \$2.50 each; select tested, \$3.00. Bees by the pound. Write for prices.
Prof. W. A. Matheny, Ohio University, Athens, O.

DAY-OLD ITALIAN QUEENS—High quality, low price, satisfied customers. Safe arrival guaranteed in U. S. and Canada. Safe introduction. Prices 1, 75c; 12, \$7.20; 100, \$60. Write for circular early.
James McKee, Riverside, Calif.

1921 price of bees and queens from the A. I. Root Co. leather-colored stock. 1 lb. bees with queen, \$5.00; 2 lbs., \$7.50. Untested queens, \$1.50 each; dozen, \$15.00. Safe arrival. Orders booked now.
Greenville Bee Co., Greenville, Ala.

FOR SALE—Three-banded Italian bees and queens, April and May, 1 untested queen, \$1.50; tested, \$2.50; 2 lbs. bees, \$4.50. Add price of queen wanted. Safe delivery and satisfaction guaranteed.
J. L. Leath, Corinth, Miss.

"NOT the best in color or possibly not the gentlest, but mothers of colonies that bring in the honey," is what my customers tell me of my queens. My circular tells about them. R. V. Stearns, Brady, Texas.

QUEENS—THE FAMOUS BRENNER strain of Italians. Equalled only by the best. Untested, \$1.50 each; \$15.00 per dozen. Tested, \$2.50 each. Satisfaction guaranteed. Dr. A. Wright, Kingsbury, Texas.

FOR SALE—A limited number of leather-colored Italian queens. The kind that gets honey. L. C. Keet in 1919 produced 40,000 pounds of honey from 200 colonies. Geo. B. Howe, Sacket Harbor, N. Y.

ITALIAN QUEENS—Recognized honey-gathering strain. June 10 (a little earlier if possible) until close of season. Untested, each, \$1.75; 6, \$10.00; 12, \$18.50.

R. F. Holtermann, Brantford, Ont., Can.

FOR SALE—Three-banded Italian queens, after May 25, untested, 1, 50c; 6, \$8.00; 12, \$15.00. Tested queens, \$3.00 each. The above queens are all select.
Robt. B. Spicer, Wharton, N. J.

FOR SALE—Unsurpassed Italian queens, ready June 1. Untested, 1, \$1.50; 6, \$7.50; 12, \$14.00; 50, \$55.00; 100, \$105.00. Tested, 1, \$2.50; 6, \$13.50. My queens are actually laying before they are sent out.
J. D. Harrah, Freewater, Oregon.

FOR SALE—Root's strain of Golden and leather-colored Italian queens, bees by the pound and nuclei. Untested, \$1.50 each; select untested, \$2.00; tested, \$2.50 each; select tested, \$3.00. For larger lots write. Circular free.
A. J. Pinard, 440 N. 6th St., San Jose, Calif.

FOR SALE—Italian queens, untested, in June, 1, \$1.50; 6, \$8.25; 12, \$16.00; tested, \$2.50 each. From July 1 to Oct. 1, untested, 1, \$1.25; 6, \$7.00; 12, \$13.50. Tested, \$2.00. Safe delivery and satisfaction guaranteed. Ready June 1 to June 10.
R. B. Grout, Jamaica, Vt.

BEES FOR SALE—100 colonies in Standard dove-tailed hives, Hoffman frames, wired combs, good condition, painted, \$11.00, in lots to suit. 50 Miller feeders, never unpacked, \$18.00, or 50c each in lots to suit. Alexander feeders at 40c each, new. Cosy Nook Apiaries, Blackfoot, Idaho.

SHE-SUITS-ME queens, season of 1921. Untested Italians, \$2.00 each, 10 or more, \$1.75 each, from May 15 to June 15. After June 15, \$1.50 each, up to nine queens; 10 to 24 queens, \$1.40 each; 25 and up, \$1.25 each.

Allen Latham, Norwichtown, Conn.

FOR SALE—2 lbs. bees on comb, \$4.00; 3 lbs. on comb, \$5.50. Untested queen with bees, \$1.25, without bees, \$1.50. Tested queen, \$2.00. No disease in this country. Orders of 50, 5 per cent discount. 100 packages, 8 per cent. If bees arrive in bad order, will replace or refund money.

F. M. Morgan, Hamburg, La.

PHELPS' GOLDEN ITALIAN QUEENS combine the qualities you want. They are GREAT HONEY-GATHERERS, BEAUTIFUL and GENTLE. Virgins, \$1.00; mated, \$2.00; tested, \$5.00. Breeders, \$10 to \$20. Safe arrival guaranteed only in the U. S. and Canada.

C. W. Phelps & Son, Binghamton, N. Y.

ITALIAN QUEENS—Three-banded, select untested, guaranteed. Queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness, and perfect marking. Price, May and June, \$1.50 each; 12 or more, \$1.25 each. Send for circular.

J. H. Haughey & Co., Berrien Springs, Mich.

"QUEENS, QUALITY FIRST QUEENS." High-grade, pure, three-banded and golden Italians. These queens are as good as can be bought: are gentle, prolific, and good honey-gatherers. I guarantee safe arrival and satisfaction. Why not try these and be convinced? Untested, \$1.25 each; 6, \$6.50; 12, \$12.50. Selected untested, \$1.50; 6, \$8.00.

G. H. Merrill, Pickens, S. C.

TWO-FRAME NUCLEI with untested Italian queens from the apiary of E. R. King, formerly inspector in Ohio and later in charge of Apiculture at Cornell University. No disease in territory. May delivery, \$7.50; June, \$6.50; July, \$5.00. 50 per cent cash with order. If queen is not wanted, deduct \$1.25 from above prices.

Miss E. J. King, McArthur, Ohio.

FOR SALE—Honey-Brook Farm can supply you promptly, beginning April 10, with the very best three-banded Italian queens, one grade, select untested, \$1.50 each, or \$15 per dozen; tested, \$2.00 each straight; ready April 1. Should you find some queenless colonies this spring, send me your order for a young queen to save them. I will not disappoint you. I have the bees and can deliver the goods. Pure mating, safe arrival, and satisfaction guaranteed.
Jasper Knight, Hayterville, Ala.

FOR SALE—Packages, nuclei, and pure-bred queens—queens from Root Home-bred breeders. Untested, \$2.00; tested, \$3.00; select tested, \$3.50. Safe arrival and mating guaranteed. The Southland Apiaries, Hattiesburg, Miss., W. S. Tatum, Prop.

FOR SALE—Three-banded leather-colored bees and queens of the J. P. Moore strain, hardy, prolific, hustlers, no disease. Safe arrival and satisfaction guaranteed. For prices see larger ad elsewhere. J. M. Cutts, Montgomery, R. D. No. 1, Ala.

ITALIAN QUEENS—I am raising a limited number of queens to requeen my own yards from queens with big records. Will have a limited number for sale. Mated, 1, \$2.00; 2, \$3.50; 6, \$7.00; 12, \$15.00. Orders filled as received, ready to ship June 15. A. R. Wilcox, Birchardville, Pa.

THREE-BANDED Italians only, that have been bred to a high standard of excellence. Never had disease in my apiaries. Safe arrival and satisfaction guaranteed. Untested queens, \$1.50; 12, \$15.00; tested queens, \$2.25; 12, \$25.00. Jul Buegeler, New Ulm, Texas.

FOR SALE—Three-band Italian bees and queens, ready June 1. Fine stock, free from disease and guaranteed to please you. (One grade) select untested queens, \$1.50 each; 6, \$8.00; 12, \$15.00; 50, \$60.00. Nuclei, \$3.00 per frame. Hoffman; bees, \$3.00 per pound. A. E. Crandall, Berlin, Conn.

THREE-BANDED ITALIAN bees and queens. Two standard Hoffman frame nuclei, with untested queen, \$5.50; three-frame, as above, \$6.50. Orders booked in rotation. All dead bees will be replaced. Can furnish government inspection certificate of no disease. L. C. Mayeux, Hamburg, La.

WHEN BETTER QUEENS are raised Victor will raise them. Three-banded Italians only, mated, \$1.25 each; 6, \$7.00; 12, \$13.50; 100, \$110.00. Tested, \$3.00. Breeders, \$10 to \$25. Safe arrival guaranteed only in U. S. and Canada. Julius Victor, Martinsville, N. Y.

FOR SALE—Italian bees and queens, 3-lb. pkgs. with untested queen shipped on comb of honey in Hoffman frame, at \$7.00 each; 2-frame nucleus with untested queen, \$6.50 each; 3-frame nucleus with untested queen, \$6.00 each. No disease and safe arrival guaranteed. J. L. St. Romain, Apiarist, White Clover Farm & Apiary, Hamburg, La.

FOR SALE—Mr. Beeman, send your order early. First arrived, first served. Make shipment from April 25 to June 1. Several years' experience. 2-lb. package three-band Italian bees, 1 frame of honey, 1 untested queen, \$5.50; 25 per cent discount on each package. Guarantee safe arrival. A. J. Lemoine, Moreauville, La.

FOR SALE—2-lb. package of bees with untested three-banded Italian queen, \$5.75; 3-lb. same as above, \$7.00; 5-lb. as above, \$9.00. All bees are shipped on a frame of brood and honey, standard Hoffman frame. Safe delivery guaranteed, free from disease of any kind. We are now ready to ship. C. A. Mayeux, Hamburg, La.

NORTH CAROLINA bred Italian queens of the Dr. C. C. Miller strain of three-band Italian bees. Gentle and good honey-gatherers, from May 1 until June 1. Untested, \$1.50 each; \$15.00 per doz.; selected untested, \$1.75 each; \$17.50 per doz.; tested, \$2.25 each; \$22.50 per doz.; selected tested, \$3.00 each. Safe arrival and satisfaction guaranteed. L. Parker, Benson, R. D. No. 2, N. C.

IF you think PHELPS' GOLDEN QUEENS are BEAUTIFUL, GENTLE, and just what you want to IMPROVE YOUR STOCK, we will do our best to supply you if you will give us time to fill your order in its turn. Mated (ntested), \$2.00 each; virgins, \$1.00 each; tested, \$5.00 each; select breeders, \$10.00 to \$20.00 each. We will commence sending queens just as early as weather will permit us to rear good ones. C. W. Phelps & Son, 3 Wilcox St., Binghamton, N. Y.

FOR SALE—Dark Italian queens, Brenner strain. Untested, \$1.50. Breeders, \$3.00. Two-frame nuclei, \$7.50. Add price of queen desired. For larger orders apply for prices. My guarantee: Every queen, dead or alive, returned at once in original cage, will be replaced or money refunded. Can ship at once. Any amount. Full instructions will accompany every nucleus. Mrs. J. T. FitzSimon, Castroville, Texas.

PACKAGE bees and queens: 2 lbs. of Italian bees with tested Italian queen, \$5.00; 2 lbs. hybrids or blacks with tested Italian queen, \$4.00. These mixed bees with tested Italian queens are a bargain at this price, as the hybrids will soon be replaced by pure Italians. No disease and safe arrival guaranteed. Ship by express only. Send cash with order. Elevation Apiaries, Milano, Texas, A. R. Graham, Mgr.

FOR SALE—Pure Italian queens, Golden or leather-colored, packages and nuclei: 1 untested queen, \$1.50; 6, \$7.50; 12, \$13.50; 50, \$55.00; 100, \$100; virgins, 50c each; packages 24 and under, \$2.25 per pound; 25 and over, \$2.00 per pound; nuclei, 1-frame, \$4.00; 2-frame, \$6.00; 3-frame, \$7.50; queens extra. One-story 10-frame colony with queens, \$12.00. Golden Star Apiaries, R. 3, Box 166, Chico, Calif.

QUEENS—Three-banded Italians only. Now that the booking season for nuclei has passed, and while I have a large number of orders for nuclei, I shall not be too busy with these to fill your orders for queens. 1 untested for April, \$1.25; 12, \$12.50; 1 untested for May 1 to June 1, \$1.00; 12, \$10.00; I ship no queens after June 1; weather is too hot. Discount on large orders. Safe arrival guaranteed. L. R. Dockery, Carrizo Springs, Texas.

FOR SALE—Bright Italian queens and bees, untested queens, \$1.50 each; \$15.00 per dozen; 1 lb. bees, \$5.00; 2 lbs. bees, \$9.00. If queen is wanted with bees add the price of queen. We guarantee safe arrival and reasonable satisfaction in U. S. and Canada. Cash or certified check must accompany the order for prompt shipment, unless parties are known or satisfactorily rated. Graydon Bros., Greenville, R. D. No. 4, Ala.

FOR SALE—1921 prices on nuclei and queens. 1-frame nucleus, \$3.00; 2-frame nucleus, \$5.00; 3-frame nucleus, \$6.50, without queens f. o. b. Macon, Miss. 5 per cent discount in lots of 25 or more. Untested queens, \$1.50 each; \$15.00 per dozen; tested, \$2.00 each; \$22.00 per dozen. No disease. Inspection certificate with each shipment. Safe arrival and satisfaction guaranteed in U. S. Queens sold only with nuclei. Geo. A. Hummer & Sons, Prairie Point, Miss.

We want to please you; our reliable three-banded queens and bees will be ready May 1. All bees are shipped on a standard frame of brood and honey. 1-lb. package bees, no queen, \$3.25; 2-lb., \$4.50; 3-lb., \$5.75. One-frame nuclei, no queen, \$2.75; 2-frame, \$4.00. Queens untested, each, \$1.50. A few hybrid bees from ontaryards; but remember, all queens are reared from our home queen yard. Safe delivery guaranteed; also free from disease of any kind; 25 per cent with order, balance 10 days before shipping date. A few selected tested queens at \$2.50 each. Oscar Mayeux, Lock Box No. 15, Hamburg, Louisiana.

PRITCHARD QUEENS (Three-banded Italians)—My first season selling direct to the trade, June price: 1 untested, \$1.75; 6 for \$9.50; 1 select untested, \$2.00; 6 for \$11.00. After July 1: 1 untested, \$1.50; 6 for \$8.00; 1 select untested, \$1.75; 6 for \$9.50. Write for prices on larger quantities. I have a few extra-select tested queens one year old at \$5.00 each. Queens clipped free of charge on request. Acknowledgment and directions for introducing sent on receipt of order. Safe delivery and satisfaction guaranteed. Let me book your order now for early delivery, specifying the date of shipment desired. Otherwise orders will be filled in rotation. Arlie Pritchard, Medina, Ohio.

PACKAGE BEES—Dependable Italian queens.
E. A. Harris, Albany, Ala.

FOR SALE—From 1 to 50 colonies Italian bees in standard hives; 10-fr., \$10.00 per colony; 8-fr., \$8.00, f. o. b. Merritt. J. H. Corwin, Merritt, Mich.

FOR SALE—Golden queens ready May 1: 1, \$1.50; 6, \$7.50; 12, \$14.00; 100, \$100. Virgins, 75c each. W. W. Talley, Greenville, R. D. No. 4, Ala.

CAN furnish limited number 2-fr. nuclei with untested queen, \$5.00 after May 15, receiver to return shipping boxes. H. S. Ostrander, Mellenville, N. Y.

FOR SALE—Pure Italian queens and nuclei, 1 untested queen, \$1.50; 12, \$15.00; tested queens, \$2.50 each; 2-frame nucleus, \$5.00; 3-frame nucleus, \$6.50. Add price of queen wanted to price of nucleus.
Frank Bornhoffer, R. D. No. 17, Mt. Washington, O.

QUEENS—Select three-banded Italians. Reared from the best mothers and mated to choice drones. Untested, 1, \$2.00; 6, \$9.00; 12, \$16.80. After June 1, 1, \$1.50; 6, \$8.00; 12, \$15.00. Select tested, \$3.00 each. Write for prices per 100. Descriptive circular free. Hardin S. Foster, Dept. G, Columbia, Tenn.

I. F. MILLER'S strain Italian queen bees. Northern-bred for business; from my best **SUPERIOR BREEDER** (11 frames brood on April 7), gentle, roll honey in, hardy, winter well, not inclined to swarm, three-banded, 27 years' breeding experience. Satisfaction guaranteed. Safe arrival in U. S. and Canada. Untested, \$1.50; 6, \$8.00; 12, \$14.00. Select, \$1.75; 6, \$9.00; 12, \$17.00; 1 lb. bees, \$3.50; 2 lbs., \$5.50; 3 lbs., \$7.50. (No queen.) I. F. Miller, Brookville, R. D. No. 2, Pa.

BIG BARGAIN IN SECTIONS—We have an odd lot stock A and B grade sections not manufactured for our regular grade, size $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{2}$. They compare quite favorably with Root Quality sections. We recommend both the A and B grades as a bargain. The A grade is strictly fine, and the B grade is quite as good except for color and imperfections. Stock limited and we urge quick action. A grade in crates of 500 at \$7.65; B grade at \$7.50. Available only in crates of 500. The A. I. Root Company, 224-230 W. Huron St., Chicago.

A BARGAIN—I shall select 40 of the best colonies in one of our out-yards this year to run for increase. Now I want the queens in these all sold, so I can remove them all at the same time to start cells for increase. They are all less than one year old, right in the prime of their life. Mothers of prime colonies, the pick of the whole yard, and purely mated, descendants of the famous Moore strain of leather-colored Italians. In order to have those queens all sold when I want to remove them I am going to offer them at a bargain. I will sell them for \$1.50 each, cash with order. Orders may be sent now; first ones to send get the queens. Queens will be mailed sometime about the 15th or 20th of June, dependent on the season and weather. Safe arrival and satisfaction guaranteed.
Elmer Hutchinson & Son, Lake City, Mich.

HELP WANTED.

WANTED for the season of 1921 an experienced queen-breeder. State experience had, reference, age, height, weight.

W. J. Forehand & Sons, Ft. Deposit, Ala.

WANTED—One experienced man, and students or helpers, in our large bee business; good chance to learn. Modern equipment and outfit, including auto truck; located near summer resorts. Write giving age, height, weight, experience, reference and wages wanted. W. A. Latschaw Co., Clarion, Mich.

WANTED—One experienced man and students, clean habits, able-bodied and willing workers, as helpers with our more than 1000 colonies. Opportunity to learn the business from A to Z. 1920 crop

1922, 1000 pounds. Theory also. Write immediately giving age, height, weight, habits, former employment, experience, references, wages, photo, all in first letter. E. F. Atwater (former Special Field Agent in Beekeeping, U. S. Dept. Agr.), Meridian, Idaho.

SITUATIONS WANTED

POSITION WANTED—Wanted work in an apiary by man who has had 40 years' experience in both extracted and comb-honey production. For full particulars write Geo. Whitcomb, 17 South St., Warren, Pa.

POSITION WANTED—Mr. Beekeeper, what would you offer for such help. Wish to work with bees, experienced, willing to build any building, when not busy with bees, or do carpentry work. Have all kinds of tools. W. March, 3844 Orange Ave., Cleveland, Ohio.

LEWIS 4-WAY BEE ESCAPES



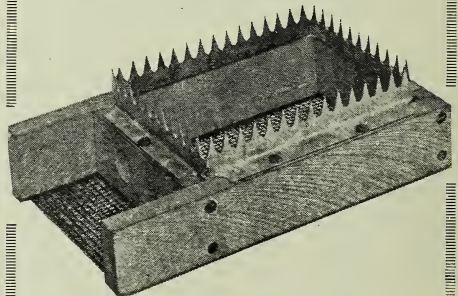
Four exits from supers. Fits all standard boards. Springs of coppered steel. Made of substantial metal. Made by

G. B. Lewis Company, Watertown, Wis., U.S.A.

Sold only by Lewis "Beeware" Distributors.

Stop Losing Valuable Queens!

This can be done by the use of the Jay Smith Push-in-the-Comb introducing cage. This cage has been thoroughly tested, and will give very satisfactory results. For complete information on



this cage, see pages 498 to 500, August, 1919, "Gleanings in Bee Culture." Price complete, 75 cents each; ten, \$7.00; one hundred, \$60.00.

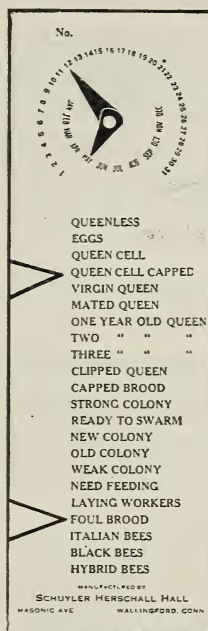
The A. I. Root Company
West Side Station
MEDINA OHIO

Happy Hours in California—Continued from p. 285.

view. They said: "Surely you are not going to leave this region until after 'Blossom Day.' People come from all parts of the country to see blossom time in the Santa Clara Valley." Unfortunately a business man's plans are not flexible enough to take in all the "blossom days" and other delightful occasions which his wife might enjoy; but there were enough of the prune trees in bloom to help us imagine what the broad valley and surrounding foothills must be like, clothed in the fragrant white of the fruit bloom, with the background of purple mountains.

DOWN in southern California a nice brother-in-law took us for more long drives thru the orange groves, beautiful towns, mountains, canyons, valleys, and beaches. Perhaps one of the most beautiful drives in that region is from the beach near Santa Monica thru Topanga Canyon up to the heights overlooking the San Fernando Valley. On such a ride I always think gratefully of the vision into the future which the Californians must have had to make such beauty spots so accessible with perfect roads. The road winds up from the floor of the canyon, enclosed by steep hills on either side, with a deep mountain brook sometimes on one side of the road, sometimes on the other, as we crossed bridges. At one point we stopped

(Continued on page 310.)



You, Mr. Beekeeper, can simplify beekeeping and get more honey and make more money if you

use
**HALL'S
HIVE
MARKER**
and keep better tab on your bees.

A great time saver. Satisfaction guaranteed.

Price 25c.
100, \$20.

Size 2 3/4 x 9 in.

Manufactured by

Schuyler Herschell Hall

Masonic Ave., Wallingford, Conn.

Thagard's Italian Queens

Bred for Quality

My three-banded queens are bred from imported stock: they are hardy, prolific, gentle, disease-resisting and honey producers. A good queen is the life of any colony; head your colony with some of our queens, place our queens against any queens you may obtain anywhere, **and note the results.** I do not breed for quantity, but breed for **quality.** My queens have proven this to thousands of beekeepers that have tried them. Book your order now for May and June delivery.

—April 1st to July 1st.—

	1	6	12
Untested	\$2.00	\$8.00	\$15.00
Select Untested ..	2.25	10.00	18.00
Tested	3.00	16.00	28.00
Select Tested	5.00	25.00	50.00

Safe arrival, pure mating, and perfect satisfaction guaranteed.
Circular free.

V. R. THAGARD

Greenville, Alabama

"NOT the best in color or possibly not the gentlest, but mothers of colonies that bring in the honey," is what my customers tell me of my queens.

My circular tells about them.

R. V. STEARNS
Brady, Texas

QUEENS! QUEENS! QUEENS!

Have you secured all you need? I have them as fine as you can secure anywhere at a reasonable price. After May 15th you can get them at the following prices. If you want them earlier look on page 179, March issue, or you will find my ad in the April issue of Gleanings.

	1	12
Untested queens	\$.150	\$13.50
Tested queens	2.50	26.00
Select tested	3.00	30.00
Breeders	\$5.00 to \$10.00	at all times.

You will notice that I don't advertise any select untested queens. It is because all that I ship now are selected. If they are not the best, I don't ship them; and if they don't give you satisfaction and you write me, I will make it satisfactory to you.

H. L. MURRY
Soso, Mississippi.

GOLDEN QUEENS FOR 1921

Untested queens for delivery from April 20th to July 1st, \$1.50 each, or 6 for \$8.00; for hundred lots write for prices. I guarantee safe arrival and reasonable satisfaction, and all orders and inquiries will be answered promptly.

R. O. COX
Route 4, Luverne, Ala.

**Don't Chop
Your Grass!**

Shave the Ground

with MARUGG'S SPECIAL grass blade, with DANGEL cutting edge.

Write for particulars THE MARUGG COMPANY, Dept B TRACY CITY, TENN.



(Continued from page 309.)

to pick bunches of the beautiful purple and blue lupines and admire the view, and my sister, in the goodness of her heart, insisted that I ride on the front seat where I could see more. To tell the truth, there were times when I saw nothing at all, for my eyes were tightly closed with fright. Loving the mountains as I do, I always accept any invitation for a mountain drive, and always shall, but the way the drivers in the West take the mountain curves fills me with awe at their daring. I don't see how they can be sure they are not going to meet another machine coming toward them around the curve, with disastrous results to one or both, and even without a collision it would be so easy for a machine to shoot off into space. We climbed so rapidly that we could sometimes see one or more sections of the road which we had just traversed below us, and we twisted around the hills until I had no idea of direction and little idea of whether we were going up or down. Several times I feebly remonstrated with my brother-in-law for driving so fast down a dangerous grade, only to be informed that we were climbing all the time. Whether it is because the road at times changes from a very steep grade to one less steep, or because of the steeper hill at the side of the road, it is always difficult

(Continued on page 312.)

NOTICE!

Pritchard Queens

are not just common
queens named, but

A NOTED STRAIN

The result of years of careful breeding and selection.
Reared and offered for sale by

ARLIE PRITCHARD

Medina, Ohio.

See my classified ad, page 307 for prices and guarantee.

Glass and Tin Honey Containers

2½-lb. Cans, 2 dozen reshipping cases.....\$1.45 case; crates of 100, \$ 6.50
5-lb Pails (with handles), 1 dozen reshipping cases 1.35 case; crates of 100, 8.30
10-lb. Pails (with handles), ½ doz. reshipping cases 1.10 case; crates of 100, 12.75
60-lb. Tins, 2 per case—NEW, \$1.30 case; USED, 50c.

WHITE FLINT GLASS, WITH GOLD LACQD. WAX LINED CAPS.

8-oz. Honey Capacity, Cylinder Style.....\$1.50 per carton of 3 dozen
16-oz. Honey Capacity, Table Jar Style..... 1.40 per carton of 2 dozen
Quart or 3-lb. Honey Capacity, Mason Style..... 1.00 per carton of 1 dozen

HOFFMAN & HAUCK, Inc. - - Woodhaven, New York

PATENTS

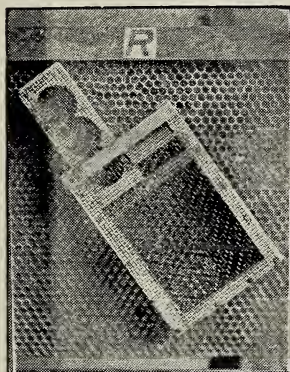
Practice in Patent Office and Court.
Patent Counsel of The A. I. Root Co.
Chas. J. Williamson, McLachlan Building,
WASHINGTON, D. C.

"Best" Hand Lantern



A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. Agents wanted. Big Profits. Write for Catalog. **THE BEST LIGHT CO.**

306 E. 5th St., Canton, O.



SAFE-WAY QUEEN INTRODUCING CAGE

Cut shows cage in position on a section of a brood comb. Also shows mailing cage in position. Try it. It will do the business.

PRICE 50c.

O. S. REXFORD
Winsted, Ct.

THREE-BAND and GOLDEN QUEENS

That produce hustling bees. Bred to fill the supers from the finest breeding strains obtainable. Hustlers, long-lived, and as beautiful in size and color as can be. Price each, untested, \$1.75; tested, \$3.00. Orders filled promptly, satisfaction guaranteed. Ask for price on large orders.

DR. WHITE BEE COMPANY
SANDIA, TEXAS.

SPECIAL CROPS

\$10,000.00 per acre every 5 years.

A high grade monthly devoted to growing MEDICINAL plants. \$1.00 per year, sample copy ten cents.

HYBRID POTATO SEED. Something new. Every seed will give you new variety of potato. You will get all shapes and all colors. Some better than old standard sorts and some not as good. Package of this seed 25 cts. Potato seed and new subscription both for \$1.00. Address

SPECIAL CROPS PUB. CO.
Box G, Skaneateles, N. Y.

QUEENS & BEES

We have one of the most modern queen-rearing outfits in the United States, and are breeding from new imported Italian blood. We produce **QUALITY** instead of **QUANTITY**.

A limited number of orders for spring delivery will be accepted at the following prices:

Quantity	1	6	12	24
Untested	\$2.00	\$11.40	\$21.60	\$40.80
Sel. Untested..	2.25	12.80	24.30	45.90

Special price of \$1.50 each on untested queens for June delivery in lots of 12 or more, if booked in advance.

We are also prepared to furnish full colonies, nuclei, and pound packages. Write today for prices.

The A. I. Root Co. of Texas
P. O. Box 765,
SAN ANTONIO, TEXAS.

Buy Your Bee Supplies Now

Take advantage of early-order discounts by ordering NOW. We guarantee to please you. "Prompt service and the very best" is our motto. We want your beeswax and old comb. Highest cash and trade prices offered. Texas beekeepers should write A. M. HUNT, Goldthwaite, Texas.

Manufactured by

Leahy Manufacturing Company

95 Sixth St., Higginsville, Missouri.

Write for FREE catalog. It is to your interest.



Established 1885.

Write us for catalog.

BEEKEEPERS' SUPPLIES

The Kind You Want and the Kind
That Bees Need.

We have a good assortment in stock of bee supplies that are mostly needed in every apiary. The A. I. Root Co.'s brand. Let us hear from you; information given to all inquiries. Beeswax wanted for supplies or cash.

John Nebel & Son Supply Co.
High Hill, Montgomery Co., Mo.

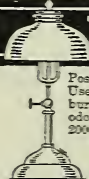
When Stingers Can't Sting



Root's Bee-Proof Suit.

Bees can't sting thru this bee-proof suit, which is a combination of veil and specially designed blouse. It is comfortable, easy to put on and off, and provides perfect freedom for the movement of the arms. The draw-string is at the waist, and when properly drawn and tied shuts off any chance of a bee's getting inside. It gives absolute insurance against bee stings above the waist. Can be worn with or without a coat, and either inside or outside of a coat, if a coat is worn. For either men or women. Price, \$5.00.

THE A. I. ROOT CO.,
West Side Sta., Medina, Ohio.



The "BEST" LIGHT

Positively the cheapest and strongest light on earth. Used in every country on the globe. Makes and burns its own gas. Casts no shadows. Clean and odorless. Absolutely safe. Over 200 styles, 100 to 2000 Candle Power. Fully Guaranteed. Write for catalog. AGENTS WANTED EVERYWHERE.

THE BEST LIGHT CO.
306 E. 5th St., Canton, O.

(Continued from page 310.)

on a mountain road for me to tell whether we are ascending or descending unless I get out and walk.

When we finally reached the summit overlooking the San Fernando Valley the view was so beautiful in the late afternoon sunshine that the memory makes my heart ache to think I live so far away from the mountains. Down, far, far below was the broad, fertile valley with its roads, fields, and villages and beyond a colorful mountain range, the whole softened by the purple haze of distance. In the foreground were fields of bright orange yellow, which they told me were fields of poppies.

One of the most wonderful features of driving in the vicinity of Los Angeles on a clear day is the way the snow-crowned San Bernardino range, with "Old Baldy," appears floating high above the blue haze of the horizon like phantom mountains. One can drive for hours in almost any direction and still keep in sight of "Old Baldy" if the day is clear; and yet it is some 40 miles from Los Angeles, I believe. It always reminds me of "I will lift up mine eyes unto the hills, from whence cometh my help."

Italian Queens

\$2.00 each.

APIARIAN SUPPLIES

I. J. Stringham

Glen Cove, New York.

STUTT'S ITALIAN QUEENS

are supreme queens: ready June 1. Untested, \$1.25; 6, \$6.50; 12, \$12.50. Select untested, \$1.50; 6, \$8.00; 12, \$15.00. Pure mating and safe arrival guaranteed.

ALFRED A. STUTT, Lincoln, Ills.

INDIANOLA APIARY

will furnish 3-banded Italian bees and queens: Untested queens, \$1.00 each; tested, \$1.50 each. One pound bees, no queen, \$2.00. No disease.

J.W.SHERMAN, VALDOSTA, GA.

TYPEWRITER SENSATION



\$4 or \$5 a month
will BUY
A Standard, Guaranteed TYPE-
WRITER With Every Modern
Writing Convenience

Write, Today, For Illustrated Circular
Explaining Try-Before-You-Buy Plan

SMITH TYPEWRITER SALES CO.

(Harry A. Smith) 370 - 218 No. Wells St., Chicago, Ill.

NEWMAN'S Bred From the Best. Absolutely First Quality ITALIAN QUEENS

and fully guaranteed. No disease. Satisfaction and safe arrival.

Untested, \$1.50; 6, \$8.00; 12, \$15.00. Select Untested, \$2.00; 6, \$10.00.

12, \$19.00. Circular free.

A. H. NEWMAN, Queen Breeder
MORGAN, KY.

NEW ENGLAND

BEEKEEPERS will find a complete stock of up-to-date supplies here. Remember we are in the shipping center of New England. If you do not have a 1921 catalog send for one at once.

H. H. Jepson, 182 Friend St., Boston 14, Mass.

LARGE, HARDY, PROLIFIC QUEENS

Three-band Italians and Goldens, pure mating and safe arrival guaranteed. We ship only queens that are top-notchers in size, prolificness, and color. Untested, \$2.00 each; six for \$11.00; twenty-five for \$45.00. Tested queens, \$3.00 each, six for \$16.00.

BUCKEYE BEE CO., Box 443, Massillon, Ohio.

World's Best Roofing

at Factory Prices



"Reo" Cluster Metal Shingles, V-Crimp, Corrugated, Standing Seam, Painted or Galvanized Roofings, Sidings, Wallboard, Paints, etc., direct to you at Rock-Bottom Factory Prices. Positively greatest offer ever made.

Edwards "Reo" Metal Shingles

cost less; outlast three ordinary roofs. No painting or repairs. Guaranteed rot, fire, rust, lightning proof.



Free Roofing Book

Get our wonderful low prices and free samples. We sell direct to you and save you all in-between dealer's profits. Ask for Book No. 183

LOW PRICED GARAGES

Lowest prices on Ready-Made Fire-Proof Steel Garages. Set up any place. Send postal for Garage Book, showing styles.

THE EDWARDS MFG. CO.,
583-583 Pike St., Cincinnati, O.

FREE

Samples &
Roofing Book

MASON BEE SUPPLY COMPANY

MECHANIC FALLS, MAINE

From 1897 to 1921 the Northeastern

Branch of The A. I. Root Company

Prompt and Efficient Service BECAUSE—Only Root's Goods are sold. It is a business with us—not a side line. Eight mails daily. Two lines of railway.

☐ If you have not received 1921 catalog send name at once.

BEE SUPPLIES

Root's Goods at Factory Prices With Weber's Service

We carry several carloads of bee supplies, and are able to give prompt shipment at all times. Our motto is a customer must be satisfied; give us a trial and we will show you how quickly we will answer your correspondence; send your order and it will follow 24 hours after we receive it. Our new catalog will be ready about January 15th; send for same. We have thousands of satisfied customers; why not you? Send a list of your wants and we will quote you

C. H. W. Weber & Co.

2163-65-67 Central Ave., Cincinnati, Ohio.

Pure Italian Queens of the Best Known Strain

For immediate delivery of two-frame nuclei, two-pound packages and full colonies. A. I. Root and H. D. Murry three-banded stock.

Prices:	1	12
Untested	\$1.50	\$14.50
Tested	2.25	24.00
Select Tested..	3.00	30.00

Two-frame nuclei with untested queens, \$6.00; twenty-five or more, \$5.50. Two-frame nuclei with tested queens, \$6.75; twenty-five or more, \$6.25. Two-pound packages hybrid bees, each \$4.00; add price of queens wanted.

No disease near here; health certificate with all I have for sale. Safe arrival and satisfaction guaranteed. Terms: One-fourth with order; balance due at shipping time.

Baughn Stone
Manchester, Texas.

Beekkeeping as a Side Line.—Continued from p. 287.

their own hands. By bodily exercise they generate heat. By forming a close cluster they conserve it. The bees on the outside become a living wall, that confines the heat produced by those who, within this protected hollow, work faithfully and steadily, waving wings and moving legs and abdomens. The colder it gets, the harder they work, even to the point of making the temperature within the cluster rise as that outside falls. There is a constant interchange of position, the bees on the outside coming in, while those from within work their way out.

To allow this continued motion, there must be a constant consumption of energizing food. Few foods produce as much energy as the honey stored by the bees in summer for use in the winter. How wonderfully all the details co-ordinate!

QUEENS

Now for May and June. Good crops and good queens go together.

GENTLE THREE-BAND ITALIANS

Untested \$1.25, Select Untested \$1.50.

D. W. HOWELL
Shellman, Ga.



THE OLD RELIABLE THREE-BANDED ITALIANS



Booking orders now for 1921. Queens ready April 1st. My Italians are of an exceptionally vigorous and long-lived stock strain of bees. They are gentle, prolific, very resistant to foul brood, and the best of honey-gatherers. I have sold a good many queens to parties who are using them in stamping out foul brood. Orders booked for one-fourth cash, balance before delivery. Will guarantee safe arrival in the United States and Canada. Descriptive circular and price list free.

Prices April, May, and June			July to November			
1	6	12	1	6	12	
Untested	\$1.50	\$8.00	\$15.00	\$1.25	\$6.50	\$12.50
Select Untested	1.75	9.00	16.00	1.50	8.00	15.00
Tested	2.50	12.50	24.00	2.25	12.00	22.00
Select Tested	3.00 each			3.00 each		
No nuclei or pound pack-	John G. Miller, 723 C St., Corpus Christi, Tex.					
ages of bees for sale.						

No nuclei or pound packages of bees for sale. **John G. Miller, 723 C St., Corpus Christi, Tex.**

**BANKING
BY MAIL
AT 4%**

YOUR CHANCE IN LIFE

is of your own making rather than of your taking. Your Savings Account may—WILL—be the making of your chance. MAIL your Savings deposits to this institution.

THE SAVINGS DEPOSIT BANK CO.

A. T. SPITZER, Pres.
E. R. ROOT, Vice Pres. E. B. SPITZER, Cash.

MEDINA, OHIO

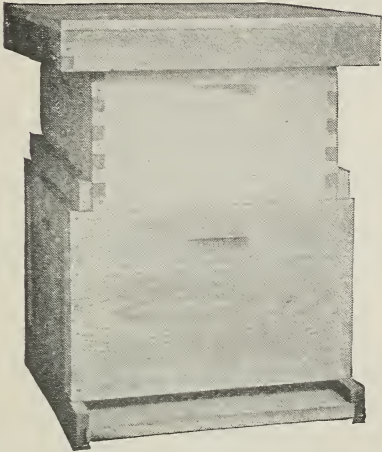
Your present brood equipment can be put above the Modified Dadant hive used as full depth supers.

Features are: Deep frames, large one-story brood nest, frame space ventilation, excellence in wintering, swarming easily controlled.

Glance at this illustration to compare this hive with "Standard" Langstroth hive.

You can get 40 per cent greater brood-comb area than in the "Standard" ten-frame Langstroth.

Modified Dadant Hive



Modified Dadant Hive Features.

- 1. Eleven frames, Langstroth length, Quinby depth.
- 2. Frames spaced 1½ inches for swarm control.
- 3. Extracting frames 6¼ inches deep.
- 4. Dovetailed body, regular reversible bottom and metal roof cover with inner cover.
- 5. Langstroth "Standard" equipment easily used with this hive.

For free booklet write any distributor of Lewis "Beeware," or to

G. B. Lewis Company - - - - - Watertown, Wisconsin
Dadant & Sons - - - - - Hamilton, Illinois

PACKAGE BEES

Have you winter losses to make up or are you thinking of making increase? If so, have you considered package bees? Their advantages are many:

- 1. You always have a young and vigorous Italian queen.
- 2. Pure Italians; no disagreeable black bees to handle.
- 3. Freedom from disease. You take no chance of infecting your apiary with foul brood in buying package bees from us.
- 4. You furnish your own equipment: it is therefore interchangeable with your present equipment. Every beekeeper knows the annoyance of fooling with odd-sized hives and frames and crossed or drone comb in colonies bought locally.
- 5. They can be made to pay for themselves in a single season and have a

good colony left, even with honey at pre-war prices. (H. D. McIntyre, Durham, Ont., Can., writes: "The 96 2-lb. packages received from you late in May average 160 pounds of surplus.")

- 6. You do not weaken your present colonies, as is the case with artificial or natural swarming, thereby sacrificing your honey crop.
- If you have tried package bees from other shippers with unsatisfactory results now try

ours: safe arrival in the U. S. and Canada, and satisfaction guaranteed. Absolute freedom from disease. We are now prepared to ship all orders promptly.

PRICES

1 2-lb. package (add 75c for parcel post)	\$5.00
50 2-lb. packages, or more, ea. 4.75	
1 Untested Queen	1.50
12 Untested Queens	15.00
1 Select Untested Queen	2.00
12 Select Untested Queens	19.00
1 Tested Queen	2.50
12 Tested Queens	25.00
1 Select Tested Queen	3.00
12 Select Tested Queens	30.00

J. M. CUTTS, Route 1, Montgomery, Alabama

Northwestern Headquarters for Italian Queens

The queen is the life of the colony. You cannot afford to keep poor queens or a poor strain of bees. I have been in the bee business for more than twenty years and have made every effort to improve the honey-gathering qualities of my bees by purchase of breeders and by selective breeding. I believe that my bees are unsurpassed by any. When you buy Untested Queens from me you are getting select untested queens. I will begin mailing queens about June 1.

Prices June 1 to October 1:	1	6	12	50	100
Untested Italian Queen	\$1.50	\$7.50	\$14.00	\$55.00	\$105.00
Tested Italian Queen	2.50	13.50			

I have no pound packages or nuclei for sale.

J. D. HARRAH, Route 1, Freewater, Oregon

TALKING QUEENS LAW'S QUEENS SPEAK FOR THEMSELVES

Some very fine Breeding Queens too good to be idle. Will mail at \$5.00 each, or with a 3-frame nucleus by express for \$10.00. Write for prices on bees. Safe arrival and entire satisfaction.

Untested, each \$1.50; 12 for \$15.00
 Tested, each \$2.00; 12 for \$20.00
 Select Tested, \$3.50 each; 12 for \$30.00

W. H. LAWS, Beeville, Texas

Colonies of Italian Bees

in practically new 10-frame hives, at \$15.00 each. No disease. These colonies will consist of at least 5 frames of brood, plenty of bees, with young Italian queens. All combs are wired, straight, and built from full sheets of foundation. Satisfaction guaranteed.

VAN WYNGARDEN BROS.

R. F. D. No. 4.

Hebron, Indiana.

ITALIAN BEES & QUEENS OF PURE THREE-BAND STOCK

Bred from best hustlers, by methods that years of experience have taught us are best, including the use of large, strong nuclei, which insures young queens emerging strong and vigorous. Safe arrival in U. S. and Canada. Health certificate with each shipment. Satisfaction guaranteed.

Untested 1 to 12, \$1.50 each. Over 12, \$1.25 each
 Select Untested 1 to 12, \$1.75 each. Over 12, \$1.50 each
 Tested 1 to 12, \$2.50 each. Over 12, \$2.25 each
 Select Tested, suitable for breeders..... \$5.00 each

Two-frame nuclei, \$5.00. Three-frame nuclei, \$7.00; add price of queen wanted with each. Eight-frame colony, \$15.00. Ten-frame colony, \$17.50. Standard equipment all around, and wired frames.

JENSEN'S APIARIES, CRAWFORD, MISS., R. F. D. No. 3.

The Bees as Buyers

IF BEES could choose the wares required to do their work best, chances are they'd select "Falcon" supplies, to keep them contented and help them produce more honey.

Because "Falcon" stands for 40 years' satisfaction among successful beekeepers and their colonies.

Our guarantee of safe arrival follows every article shipped from our factory. **Order the best—write for our red catalog.**

DISTRIBUTOR FOR THE CENTRAL WEST

William H. Rodman, 2027 Main St., Gateway Sta., Kansas City, Mo.

W. T. Falconer Manufacturing Co.

Falconer (near Jamestown), N. Y., U. S. A.

Where the best beehives come from.



SELECT THREE-BANDED ITALIANS OF THE HIGHEST QUALITY **ONE GRADE**



800 honey-gathering colonies from which to select the very best breeders. No one has better bees than I. Can make prompt delivery by return mail. I have not yet disappointed a customer.

PRICES: Untested (to July 1): each \$1.50; 12 or more \$1.25 each. After July 1, 1 to 49 \$1.25 each, 50 or more, \$1.00 each. Tested (to July 1), each \$2.00. Breeders (to July 1), \$25.00 each.

Pure mating, safe arrival, and satisfaction guaranteed. It is left with customer to say what is satisfaction.

My customers say my queens stand the northern winters. They are bred up for this, combined with the highest honey-gathering qualities and prolificness.

A new customer from Missouri, where you have to show them writes: "The dozen queens arrived promptly. They are the most beautiful I ever saw."—(Name on request.)

Another one from the same state writes: "Your 100 2-lb. packages averaged 90 pounds surplus honey per colony, 10 pounds more per colony than the other 2-lb. packages purchased elsewhere."—H. H. Thale, Durham, Mo.

Now listen to this, from Ontario, Canada: "Bees and queens purchased of you last season all wintered without a single loss. Save me 50 untested queens for May delivery."—(name on request.)

JASPER KNIGHT, Hayneville, Ala.

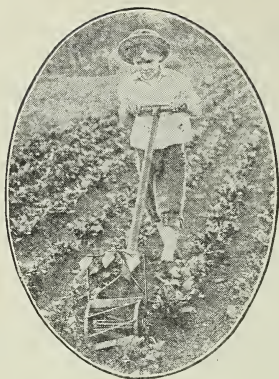
BEE SUPPLIES **The Very Best Quality & Service**

We have a large stock of Hives, Bodies, Supers, Foundation, and other supplies ready for immediate shipment.

Give us an opportunity to quote you our prices; we are certain you will find them attractive.

If you want **THE VERY BEST QUALITY FOR THE LOWEST PRICE**, send us your orders at once. All correspondence will have our immediate attention.

August Lotz Company, Boyd, Wis.



Completely Destroys the Weed Growth

More than that, the BARKER breaks the hardest crust into a level, porous, moisture-retaining mulch—all in the same operation.

A ten-year-old boy can run it—do more and better work than ten men with hoes. Saves time and labor, the two big expense items.

BARKER WEEDER, MULCHER AND CULTIVATOR

Eight reel blades revolve against a stationary underground knife — like a lawn mower. Best Weed Killer Ever Used." Works right up to plants. Cuts runners. Aerates the soil. Has leaf guards, and shovels for deeper cultivation—3 garden tools in 1.

FREE ILLUSTRATED BOOK.

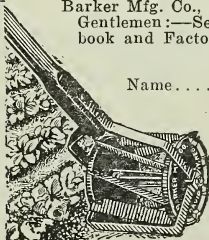
Tells how gardeners and fruit-growers everywhere are reducing their work; increasing their yields.—How to bring growing plants through a dry season.—How to conserve the moisture and force a larger, more rapid growth. Send TODAY for this free, illustrated book and special Factory-to-User offer.

BARKER MANUFACTURING COMPANY

Dept. 23.

David City, Neb.

Barker Mfg. Co., Dept. 23, David City, Neb.
Gentlemen:—Send me postpaid your free book and Factory-to-User offer.



Name.....

Town.....

State.....

R. F. D. or Box.....

Two Thousand Nuclei For Spring Delivery

A great many progressive beekeepers of today buy nuclei to make up winter losses, or in the form of pound packages to strengthen weak colonies. We know this is a good investment, and for a good many years have raised bees in the South, sending them north to catch the honey flow in July and August. It is our policy, in furnishing our customers with bees from our southern apiaries, to furnish bees that give satisfaction to you, as they have to us for the past ten years. We are very particular as to the strain of bees we keep, and the rearing of our queens is in the hands of an expert.

We maintain that the queen is the life of the colony, and they are reared under the most favorable conditions, that of natural swarming, and they are fine large ones with energy to spare, and as good as money can buy. However, we do not sell queens, but we see that a good queen goes with every nucleus we sell. We guarantee you safety against disease, as our bees are inspected constantly, and our apiaries closely watched to see that no disease appears. Our prices as follows:

	April	May	June
1-frame nucleus	\$4.00	\$3.50	\$3.00
2-frame nucleus	5.50	5.00	4.50
3-frame nucleus	7.00	6.50	6.00
4-frame nucleus	9.00	8.50	8.00
Full colonies of bees, \$12.00 per colony			

1-pound package	\$2.50
2-pound package	4.50
3-pound package	6.50

For packages with queens add \$1.50 for each package.

**WEBER BROS.
HONEY CO.
RIALTO, CALIFORNIA**

Quality Bee Supplies From a Reliable House

¶ Without fear or favor I place my BEE SUPPLIES and SERVICE before you.

¶ It is the small annoyances that often grow into disastrous results. Avoid the so-called "little losses" by using MONDENG'S goods. Quality is first—save time when you put your goods together by getting supplies that are accurately made. Service is next—no delays when bee supplies are ordered from my factory.

¶ I am ready to meet your urgent needs. Send for my latest price-list.

¶ Closing out all Langstroth and Wisconsin hives and supers. Also Langstroth triangular top-bar frames, and eight-frame D. T. supers for 4 x 5 sections. At cost price, write for quotations.

Charles Mondeng

146 Newton Ave. N. &
159 Cedar Lake Road.

MINNEAPOLIS, MINNESOTA.

Beeswax Wanted

In big and small shipments, to keep Buck's Weed-process foundation factory going. We have greatly increased the capacity of our plant. We are paying higher prices than ever for wax. We work wax for cash or on shares.

Root Bee Supplies

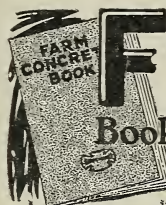
Big stock, wholesale and retail. Big catalog free.

Carl F. Buck

The Comb-foundation Specialist

August, Kansas

Established 1899.



FREE

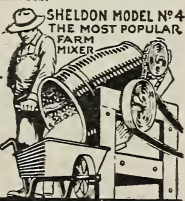
Book on Concreting

Sheldon's free book gives you the "Know How" of Farm Concreting. Tells how to make forms, place concrete, reinforce it, what mixtures to use and how to prevent failures. Gives necessary facts on construction of walls, tanks, floors, etc., giving diagrams and plans. Brimful of valuable ideas. Gives you Free the benefit of our years of experience in farm concreting. Get copy today; send your name and address.

SHELDON CONCRETE MIXERS

"Take the Backache Out of Concrete" with the best and lowest priced farm concreting outfit on the market. Saves time, money and labor. Don't buy till you have seen Sheldon Catalog and prices. Send for Catalog and Free Concrete Book today.

SHELDON MANUFACTURING CO.
459 Main Street, Nehawka, Neb.



EVERY SHEET THE SAME

As alike as peas in a pod—only more so. That is a distinguishing feature of my comb foundation. Accuracy is my watchword. My foundation is not left with the natural milled edge, but every edge is trimmed with an absolutely straight, smooth cut, and always measures right to the dot, no matter what the size ordered.

This accurate trimming not only expedites placing the foundation in the frames, but also permits of such close packing for shipment that there is no chance for it to chuck around, thus jamming the edges.

Although this extra trimming adds to the cost of manufacture, still my prices are lower than others.

Your own wax worked into foundation at lowest rates. Send for complete price list.

E. S. Robinson

Mayville, Chautauqua Co., N. Y.

30 Days' Free Trial

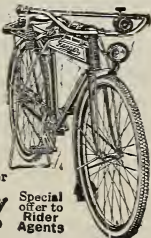
Select from 44 Styles, colors and sizes, famous **Ranger** bicycles. Delivered free on approval, from maker—direct—to rider, at **Factory Prices**. Save \$10 to \$25 on your bicycle.

12 Months to Pay Immediate possession on our liberal Easy Payment plan. Parents often advance first deposit. Energetic boys earn the small monthly payments thereafter.

Tires Horns, wheels, lamps, parts and equipment at half usual prices.

SEND NO MONEY—Ask for big free Ranger Catalog, marvelous prices and terms.

Mead Cycle Company
Dept. G158 Chicago





Queens & Bees



Mr. Beekeeper, we are establishing one of the most modern queen-rearing outfits in the U. S. A. If you want good quality, quick service, prompt attention, and perfect satisfaction, don't fail to place your orders with us, as we are ready to fill orders by return mail or your money refunded. Our queens are bred by experienced queen-breeders; they are reared by the latest and most approved method and from the very best honey-gathering strain of Italians obtainable. Our experience from boyhood up under our father (who had fifty years of experience with bees) thus enables us to produce queens as good as can be produced, but none better, and we sell at figures that will sustain the high quality of our queens. Our bees are hardy, gentle, prolific, disease-resistant, and honey gatherers. Each and every queen that leaves our yard is inspected by us personally, and all inferior ones are killed.

BEES.

We ship only 2-lb. packages by express F. O. B. shipping point, \$5.00 each; 25 or more, \$4.75 each. Add prices of queens wanted. We guarantee pure mating, safe arrival, and free from all diseases in U. S. A. and Canada. Remember you take no risk when you deal with us. Isn't that enough said?

PRICES MAY AND JUNE.

	1	6	12	100
Untested Queens.....	\$1.50	\$8.00	\$15.00	\$100.00
Select Untested Queens	1.75	9.25	16.50	115.00
Tested Queens	2.75	13.75	24.50	
Select Tested Queens..	3.50 each			

THE NORMAN BROS. APIARIES
NAFTEL, ALABAMA

Forehand's Queens

They Satisfy---Why?

Because of 23 years of experimental work, with both queen-breeding and honey-production. With breeding and selecting of imported queens, I have reached a standard which is ideal. Queens as good, but none BETTER. Why experiment? Take advantage of the life experience of my breeders.

OUR SERVICE STATION—We are ready to serve you at all times, whether you desire queens or advice. Let us help you with your bee problems. All questions are cheerfully answered.

I breed three-banded Italians only. Nov. 1st to June 1st.

	1	6	12
Untested	\$2.00	\$ 9.00	\$16.00
Selected Untested	2.25	10.50	18.00
Tested	3.00	16.50	30.00
Selected Tested	3.50	19.50	36.00

Bees in two-pound packages, 1 package, \$6.00; 25 or over, \$5.80; 50 or over \$5.40; 100 or over, \$5.00, without queens. Will begin shipping bees as early as weather will permit.

Orders booked now for spring delivery. One-fourth the full amount with order and balance when shipment is desired. Pure mating, safe arrival, and perfect satisfaction guaranteed. Write for circulars and large-order discounts. Foreign orders at receiver's risk.

N. Forehand, Ramer, Alabama

BUYING BEES IS LIKE BUYING OTHER STOCK

An important consideration in the purchase of bees or queens is to get **HARDY, VIGOROUS STOCK**. Our own bees have wintered without the loss of a single colony, and today our colonies are active and strong. We were never in better position to make prompt shipments nor to supply our customers with the highest-grade stock, than we are today. It is with bees as with any other stock, if you want something really fine it naturally will cost a little more than ordinary stock, but the results may be many times better for the investment made.

ITALIAN QUEENS.—The season is early here in Medina, and untested queens will be available earlier than usual. Our breeding queens are selected with the utmost care, and the reputation of Root's queens is second to none. The large orders that we have received from near and distant points is the best testimony on this point. Our basswood queen-breeding yard will be supplemented by our Maplewood and other yards as occasion requires, under the management of Messrs. Deyell, Mell Pritchard, Mosgrove, and Wardell.

NUCLEI.—A one, two or three frame nucleus will make an astonishing record provided such a nucleus goes out, as ours do, on full worker combs in wired frames, well supplied with bees and the proper amount of brood. We do not wish to draw any comparisons in reference to our nuclei or colonies with those supplied from other sources, but the large number of reports from hundreds of satisfied customers warrant us in believing that the extreme care we take in breeding and putting up our nuclei and in the selection of our combs is of decided advantage to our customers.

BREEDING QUEENS.—As our stock of breeding queens this spring is rather limited, it is important that orders be placed promptly for those who desire to introduce our breeding stock for 1921 use. We wish to call attention also to the fact that we are this season testing a limited number of queens for 1922 delivery of pedigreed stock, and we urge those who are expecting to replace their breeders late the coming fall or next spring to place their orders with us early this summer so that we can arrange to give them just what they want. Our prices for the pedigreed stock will run from \$25 to \$100 each.

QUANTITY ORDERS.—We refer to our catalog for prices on queens, nuclei, and colonies and urge buyers to write us immediately for quantity prices from a half dozen to 100 or more, stating delivery wanted and we will quote special prices on the same.

THE A. I. ROOT COMPANY
WEST SIDE STATION, MEDINA, OHIO, U. S. A.

Root Quality Bee Supplies

Airco Foundation

Prompt Service and Satisfaction Guaranteed.

**Order Now!
Bee Ready!**

**BEGINNER'S
OUTFITS
A SPECIALTY**

**Stock Up!
Avoid the Rush!**

DISCOUNT ON LARGE ORDERS.

Pure-Bred Italian Queens

From Root Home-Bred Queens

Orders filled in rotation unless date specified. Mating and Safe Arrival Guaranteed. Bees in Packages, Nuclei and Full Colonies.

QUEENS

Untested\$1.50 each; 12 or more, \$1.25 each
Tested 2.50 each; 12 or more, 2.25 each
Select Tested 3.00 each; 12 or more, 2.75 each

PACKAGES

1-lb. pkgs., no queen.\$3.00 each; 25 or more, \$2.75 each
2-lb. pkgs., no queen. 5.00 each; 25 or more, 4.75 each
3-lb. pkgs., no queen. 7.00 each; 25 or more, 6.50 each

NUCLEI

Two-frame Nucleus, no queen.....\$4.50
Three-frame Nucleus, no queen..... 6.00

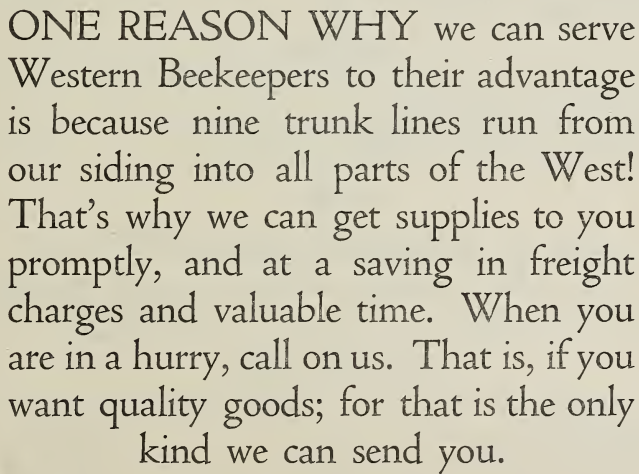
FULL COLONIES

Eight-frame colony, no queen.....18.00
Ten-frame colony, no queen..... 20.00

The Southland Apiaries

W. S. TATUM, Prop.

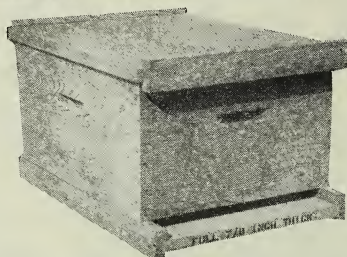
HATTIESBURG, MISS.



The A. I. Root Company of Iowa
Council Bluffs, Iowa

**Cypress
Hives**

Quality



**Wood
Eternal**

Economy

\$16.00 for five complete. Send for catalog.

SPECIALS FOR THIS MONTH.

Now is your chance to get rid of all inferior covers and replace them with the best wood cover made at a bargain. Eight-frame one-piece covers in lots of 25 at the low price of 60c each. Special discount on Hoffman frames in lots of 500 to 10,000.

ITALIAN BEES AND QUEENS.

Three-banded ITALIAN QUEENS reared from the best mothers under favorable conditions, by careful breeders under the best known methods. **GUARANTEED TO BE AS GOOD AS THE BEST, TO BE FREE OF DISEASE AND TO GIVE SATISFACTION.**

Untested, \$2.00; 12 or more, \$1.50 each. Tested, \$3.00 each.
Breeders, \$10.00, \$15.00, and \$25.00 each, shipped in nuclei.
Full colonies in eight-frame hive.....\$20.00
Full colonies in ten-frame hive..... 22.00

NUCLEI.

All our nuclei are furnished on good combs well filled with brood and a good supply of young bees.

One-frame nucleus, no queen\$3.50
Two-frame nucleus, no queen 6.00
Three-frame nucleus, no queen 8.25

BEES.

Special price on nuclei and pound packages for shipment after May 15th, in lots of 20 or more packages. Write us.

A FULL LINE OF ROOT'S GOODS AT ROOT PRICES.

Hives, Frames, Foundation, Supers, Sections, Shipping Cases, ready to ship to you promptly. Let us quote you on large orders.

PACKAGE BEES.

We guarantee safe arrival of all package bees within six days of shipping point.

One-pound package bees, no queen\$3.50 each
Two-pound package bees, no queen 6.00 each

Safe arrival and satisfaction guaranteed on everything we sell. Nuclei and pound packages shipped either from Mayhew, Miss., or Helena, Ga.

THE STOVER APIARIES

Mayhew, Mississippi

You have put off ordering until now. You must have some supplies right away. Let us help you out. We give **SERVICE**.

Try us for prompt shipments. By **MAIL, EXPRESS** or **FREIGHT**. Send in your order, large or small.

Don't Let the May-Bees Get You Order Now and Make Sure

of having your supplies ready on time.
If you want that crop of honey do your part, and the bees will do theirs.

F. A. Salisbury

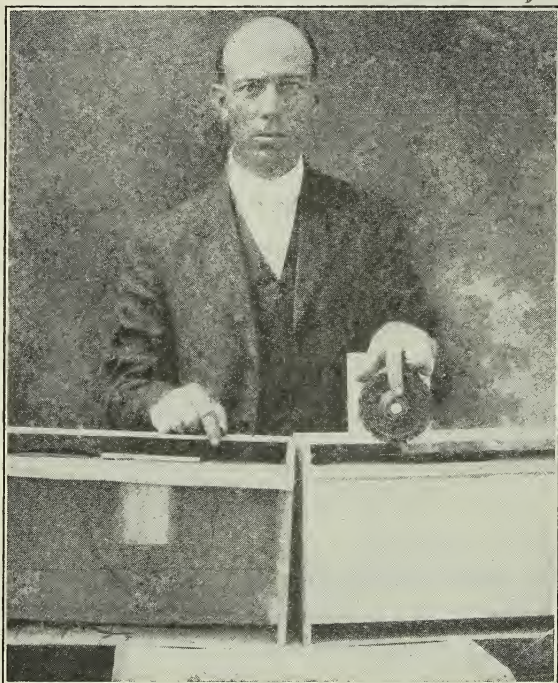
1631 West Genesee Street
SYRACUSE, N. Y.

New York State Beekeepers, Send for our catalog.

If you are looking for quality, try us. Let us have your order for smokers, tools, and whatever else you may need.

Write for our catalog. Send us a list of your needs. We will gladly quote you.

THE AULT 1921 BEE SHIPPING CAGE



Patent Pending

1st. It is a dark cage, much more so than the open screen cages we have been shipping in in the past.

2nd. The feeder uses pure sugar syrup. Better than Honey or Candy to ship on; it contains water as well as feed.

3rd. Feeders are made more substantial, 1-3 larger, and have screw cap that will not jar out.

4th. Instead of one small hole, we now use a cotton duck washer in the screw cap that has proven to overcome all the objections found to the liquid feed method.

5th. The Cage is one piece screen wire protected by thin boards on the outside. Send for free circular describing the cage in detail, prices, etc.

Queens—Package Bees—Queens

Will book your order with 20 per cent down, balance just before shipping. My Free Circular gives prices in detail, etc. Safe delivery Guaranteed within 6 days of shipping point. We ship thousands of pounds all over U. S. A. and Canada.

1-pound package bees, \$3.00 each; 25 or more \$2.85 each.

2-pound package bees, \$5.00 each; 25 or more \$4.75 each.

3-pound package bees, \$7.00 each; 25 or more \$6.65 each.

F. O. B. Shipping Point. Add price of queen wanted.

1 Untested Queen, \$2.00 each; 25 or more, \$1.75 each

1 Select Unt. Queen, \$2.25 each; 25 or more, \$2.00 each

1 Tested Queen, \$3.00 each; 25 or more, \$2.70 each

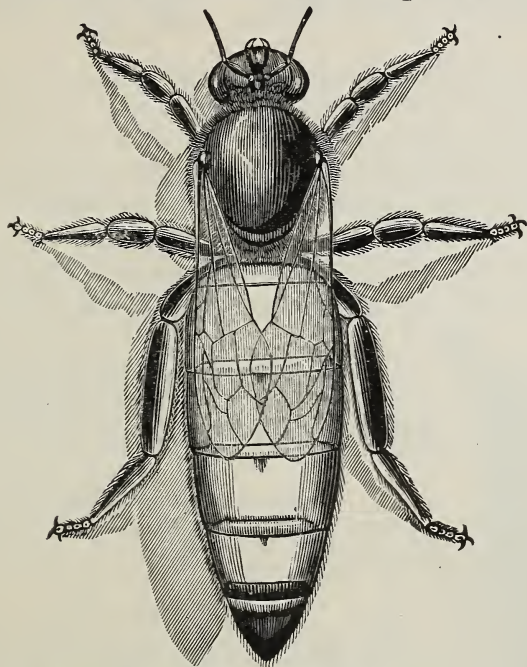
1 Select Tested, \$3.50 each; 25 or more, \$3.00 each

Nueces County Apiaries

E. B. AULT, Prop.

Calallen, Texas

"Queens that are reared to please."



Highest Quality---Prompt Service---Satisfaction

Our Reliable Three-Banded Italian Queens

will be ready by return mail promptly after April 5th. We will have 1500 Nuclei in full operation and can take care of orders by return mail. All orders filled promptly by return mail or money refunded. Requeen your colonies early.

Why Order Farmer Queens?

They are bred by as skillful and experienced queen-breeders as can be found in the United States. There are very few places where queens are reared under as favorable conditions as in our queen-rearing yards. We devote our time to rearing as good queens as possibly can be, and we positively guarantee that no better can be reared; we spare neither labor nor money in developing our strain of Italians. It is our intention to improve our original stock each year and to be more skillful queen-breeders. Our first original stock was procured from the highest quality obtainable, which we have proved to the highest point and is now not surpassed by any. Our own eyes inspect every queen that leaves our yards; no culls sent out. Place your orders, and after you have given our queens a fair test and you are not satisfied in are as good as any just return them and queens to take their money. They are very the very best for You take no risk in safe arrival in satisfaction is left prompt service given queen guaranteed to

OUR PRICES

	1	6	12	100
Untested	\$1.50	\$8.00	\$15.00	\$100.00
Select Untested	1.75	9.50	17.00	120.00
Tested	3.00	14.75	25.00	
Select Tested . .	4.00	23.00	42.00	

Write for prices on larger quantities than 100.

every way that they you have ever used, we will send you places or return your resistant to diseases, honey-gathering, buying our queens; U.S.A. and Canada; entirely to purchaser; to all orders; every be purely mated.

The Farmer Apiaries, Ramer Alabama

Where the Good Queens Come From.

A GOOD QUEEN

may bring you \$50.00 worth of honey, while a poor one may bring you nothing, therefore the cost of a good queen is trifling compared with the returns she brings. Every queen we send out is reared by me personally, and I spare no labor or expense to produce those "good queens" we all desire. I give the strongest guarantee with all queens sent out, and if any should prove other than a first-class queen, I will gladly replace her upon request. The customer's word is good. I could not afford to do this, if I did not have faith in the queens I sell.



They clean up European Foul Brood.

"Your bees last year made me the biggest crop I ever had, and besides they cured the European Foul Brood I had while I lost all my black bees with it."—Martin Bettheuiser, Tunnel City, Wis.

They Are Good Honey Getters.

"Your queens proved themselves to be what their producer claimed, 'fine gatherers.'"—E. A. Palmer, Empire, Panama Canal Zone.

They Are Gentle.

"Your bees are very gentle. I also find them to be very prolific, good workers and, in my 12-frame Jumbo hives, not given to swarming."—Harry G. Fesenfeld, Black Earth, Wis.

They Are Pretty.

"Queens bought of you are producing some fine yellow bees. They are beauties."—J. E. Beck, Arnold, Penn.

Our Breeders Make Good.

"The breeder I got from you last year is the finest queen I ever had."—John Rhodes, West Salem, Wis.

Our Method of Shipping Gives Perfect Results.

"Queens arrived in perfect condition, not a single nurse bee dead in the cage."—Arthur Sturges, Shenstone, Hartford, Cheshire, England.

1921 PRICES.

1 to 4 inclus., \$3.00 each
5 to 9 inclus. \$2.90 each
10 or more, \$2.80 each
Breeders \$12.00 each

We are usually booked some time in advance, so we suggest that you book your order as far in advance as possible in order not to be disappointed in getting your order filled when desired. Write for our catalog.

JAY SMITH

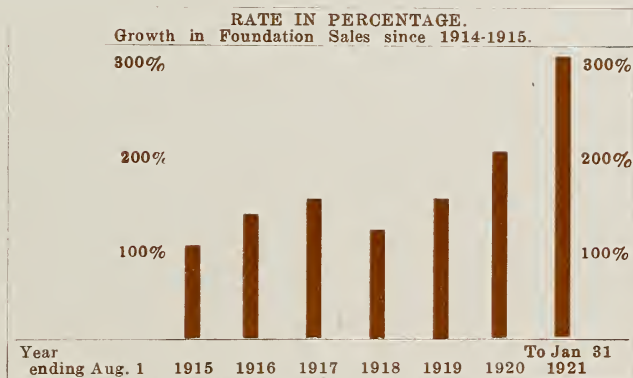
Route No. 3

Vincennes, Indiana

A GREAT RECORD

Sales of Airco Comb Foundation

from Medina showed an increase of $49\frac{1}{2}\%$ during the six months ending December 31, 1920, as compared with the same period for 1919. The record for the same period in 1919 had beaten all former records by practically the same percentage.



A record to be proud of—one which shows that beekeepers appreciate real values.

Use Airco Foundation this Season,
then be your own judge of its merits.

For your convenience, prompt service, and saving on carriers' charges you can address The A. I. Root Co., at any of the following points where Airco Foundation is always in stock:

Chicago, 224 W. Huron St.
St. Paul, 290 E. Sixth St.
Indianapolis, 873 Massachusetts Ave.
Council Bluffs, Iowa.
San Antonio, P. O. Box 765.
Los Angeles, 1824 E. 15th St.

San Francisco, 52-54 Main St.
New Orleans, 224 Poydras St.
New York, 23 Leonard St.
Philadelphia, 8-10 Vine St.
Norfolk, 10 Commerce St.
Syracuse, 1631 W. Genesee St.

THE A. I. ROOT COMPANY, Medina, Ohio

"Beeware" Lines to You

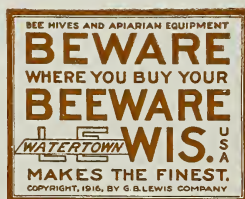


Pushing straight across the continent with the pioneers for 47 years, these lines mark some of the cities where Lewis now makes "Beeware" available to you in quantities.

Dependable in workmanship as the jeweled watch—checked for quality by workmen grown old in the service—this superiority makes "Beeware" worth more than it costs.

You should read pages 1 and 40 of our free catalog. The distributor's name is on the cover and he is worthy of your patronage. A trial will convince you. Ask us today!

LOOK
FOR



THIS
MARK

"Beeware" is a registered trademark.

G. B. Lewis Company

Home Office and Works: Watertown, Wis., U. S. A.

Branches: Memphis, Tenn.; Albany, N. Y.; Lawyers (near Lynchburg), Va.